

WOMEN IN PERIMENOPAUSE AND MENOPAUSE: STRESS, COPING AND  
QUALITY OF LIFE

By

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To my husband, Jesse and my daughters, Lauren and Sara, without whose love and support I never would have started this and to my parents, Grace and William Alznauer who made it impossible not to finish

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## LIST OF ABBREVIATIONS

ACOG	American College of Obstetrics and Gynecology
AHRQ	Agency for Healthcare Research and Quality
ANOVA	Analysis of variance
BHT	Bio-identical hormone therapy
BMI	Body mass index
CDC	Centers for Disease Control
COPE	Carver & Scheier COPE Scale (complete version)
CVD	Cardiovascular disease
DIT	Demographic Information Tool
FDA	U.S. Food and Drug Administration
HERS-I	Heart and Estrogen/Progestin Replacement Study I
HERS-II	Heart and Estrogen/Progestin Replacement Study II
HRQT	Health related quality of life
HRT	Hormone replacement therapy
HT	Hormone therapy
MAT	Menopause Appraisal Tool
MSB	Menopause Symptom Bother Scale
MST	Menopause Stress Tool
NIH	National Institutes of Health
QOL	Quality of life
SWAN	Study of Women Across the Nation
UQOL	Utian Quality of Life Scale
WHI	Women's Health Initiative

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Menopause is a normal stage of development experienced by women as part of the natural aging process. But how do women view menopause? A gap in the literature exists on whether women view menopause as a negative threat or harmful experience, a neutral event, or a positive challenge. Further, there is little published data on coping strategies and quality of life in perimenopausal and menopausal women.

The purpose of this study was to describe the appraisal of menopause as a stressor and examine the relationship between the appraisal of stress, coping strategies, and quality of life in perimenopausal and menopausal women. Based on the theoretical framework of the transactional theory of stress and coping by Lazarus and Folkman, coping strategies were hypothesized to mediate the relationship between primary appraisal of menopause and quality of life.

Descriptive statistics revealed that 83% of women in the study appraised menopause as either a neutral or a positive challenging event. Results of this study support the premise of Lazarus and Folkman's theory that primary appraisal of menopause as a stressor is unique and individual in contradiction to the original research assumption that most women would view menopause as a negative event.

Further, neither emotion focused coping strategies nor problem focused coping strategies were inherently adaptive. Five coping strategies were found to be significantly related to quality of life: the three problem focused strategies of active coping, suppression of competing activities, and planning, and the two emotion focused strategies of use of emotional social support and positive reinterpretation. Path analyses did not find that coping strategies mediated the relation between appraisal and quality of life as presented in the Lazarus and Folkman model of stress and coping.

The population of menopausal women continues to grow worldwide. Research into issues concerning perimenopausal and menopausal women has moved to the forefront with the publication of large national studies such as the Women's Health Initiative and the Study of Women Across the Nation. Appraisal of menopause as a stressor, use of coping strategies and quality of life is an area of research that has received little empirical study but warrants further scientific investigation.

## CHAPTER 1 INTRODUCTION

This chapter introduces the statement of the problem, theoretical foundation, study concepts and measures, purpose, and specific aims and associated hypotheses for this study.

### **Statement of the Problem**

Menopause is a normal life stage that all women undergo with advancing age. As women become increasingly health conscious, they are taking a more active role in their healthcare and are progressively becoming more concerned with their quality of life (Beutel, Glaesmer, Decker, Fischbeck, & Brahler, 2009; Huston, Jackowski, & Kirking, 2009). But how do women perceive menopause and what coping strategies affect quality of life during perimenopause and menopause?

While menopause is often considered stressful in the literature, very few studies have been published that specifically examine the appraisal of menopause as a stressor. Despite the increased interest in the effects of menopause on both physical health and quality of life with publication of the Women's Health Initiative in 2002 and the Study of Women Across the Nation in 2008, there is little known about the relationship between appraisal of menopause as a stressor, coping strategies, and quality of life. Scientific investigation of the appraisal of menopause, determination of what coping strategies are associated with high quality of life, and examination of the relationship between appraisal of menopause, coping strategies, and quality of life must precede development of educational and interventional strategies to maximize and maintain physical and emotional well-being during this phase of life. This study examined how women appraised menopause and explored the relationship between the

appraisal of menopause as a stressor, coping strategies, and quality of life in perimenopausal and menopausal women.

### **Theoretical Foundation**

Lazarus and Folkman's transactional model of stress and coping has been adapted for use in guiding this study of appraisal of menopause and the effects of coping strategies on quality of life for women in perimenopause and menopause (see Figure 1-1). The concepts and relational statements in the model are logically consistent with the event and variables of interest and Lazarus and Folkman's theories on stress and coping are well represented in the literature.

Originally published in 1984, Lazarus and Folkman's transactional model of stress and coping has been widely used to study the effects of appraisal of stressful events and coping strategies on outcomes such as health behaviors, functional status, and quality of life (Bauld & Brown, 2009; Clarke & Goosen, 2009; Deeks, Zoungas, & Teede, 2008; Down-Wamboldt & Melanson, 1998; Holland & Holahan, 2003; Lequerica, Forch-Heimer, Tate, & Roller, 2008; Major et al., 1990; Manne et al., 2008; Simpson & Thompson, 2009). The transactional theory of stress and coping seeks to provide a framework to understand the interplay between stressors, the environment, psychosocial resources, and coping strategies on event outcomes. Use of Lazarus and Folkman's theory allows for the simultaneous examination of evaluation of an event and cognitive and emotional variables that may interact to affect quality of life. A further discussion and details on the transactional theory of stress and coping, a synthesis of the literature, and the application to this study are presented in Chapter 2.

## **Theoretical Concepts**

This section provides theoretical background on the concepts from Lazarus and Folkman's transactional theory of stress and coping underpinning this study.

### **Event**

Events or stressors are demands made by the internal or external environment that upset homeostasis and affect physical and psychological well-being. The stressful event does not necessarily have to be negative or grand in scale. Positive events can trigger stress and what is a major or minor stressor is an individual judgment. Events can range from expected life experiences such as menopause or retirement, to loneliness, loss of a loved one, illness, failure to be promoted, or the birth of child (Lazarus & Folkman, 1984). Once an event occurs, appraisal of the event as a stressor begins.

### **Appraisal of Stressor**

Appraisal of a stressor consists of two parts; primary and secondary appraisal. Primary appraisal is the evaluation the individual makes about the personal significance of the stressor or the event. The event may be perceived to be harmful or threatening, neutral, or challenging. Secondary appraisal, often not distinguished from the measurement of primary appraisal (Kessler, 1998), is the determination of what, if anything can be done about the event and what psychosocial resources are available (Lazarus & Folkman, 1984). When the individual has determined the implications of the stressor on personal health and well-being, coping strategies are employed to manage the stressful situation.

## **Coping**

Coping is generalized ways of reacting to a stressor; it is the process of executing a response to the appraisal of a stressor. There is generalized agreement in the literature that while coping is complex and variable, there are broad ways of relating to stressors (Lazarus & Folkman, 1984). Coping strategies can be categorized broadly as emotion focused or problem focused (Wenzel, Glanz, & Lerman, 2002). While the literature generally reports that problem focused coping tends to be associated with better outcomes (Carver, Scheier, & Weintraub, 1989) there are no published studies on the effects of coping strategies on quality of life in perimenopausal and menopausal women. Lazarus and Folkman (1984) theorize that “no strategy should be considered inherently better or worse than any other; judgments as to the adaptiveness of a strategy must be made contextually” (p. 140).

### **Problem focused coping**

Problem focused coping strategies are directed at defining the problem, generating alternative solutions, weighing the pros and cons of the possible solutions, choosing a course of action, and implementing that plan (Lazarus & Folkman, 1984). Problem focused coping strategies include: use of instrumental social support, active coping, restraint, suppression of competing activities, and planning.

### **Emotion focused coping**

Emotion focused coping strategies encompass a wide range of approaches. They include strategies to lessen emotional distress and strategies which change the way the encounter is construed (Lazarus & Folkman, 1984). Emotion focused coping strategies include: positive reinterpretation and growth, mental disengagement, focus on and

venting of emotions, denial, religious coping, humor, behavioral disengagement, use of emotional social support, substance use, and acceptance (Carver, et al., 1989).

Both problem focused and emotion focused coping outcomes represent the individual's adaptation to the stressor after appraisal of the event and are influenced by coping efforts (Wenzel, et al., 2002).

### **Event Outcome**

Event outcomes in the model are varied and can range from physical health, emotional well-being, and compliance with health care regimes, to social functioning. Outcomes can also be favorable or unfavorable and an unfavorable outcome may lead to re-appraisal of the stressor and further employment of coping strategies (Lazarus & Folkman, 1984).

### **Relationships Between Concepts**

The relationships between appraisal, coping strategies, and adaptational outcomes are complex and dynamic; as appraisals of susceptibility to the stressor and severity of the consequences change and coping resources are used, outcomes are affected. Lazarus and Folkman's (1984) model is recursive and a negative outcome and emotional distress may start the appraisal and coping processes again.

A further discussion of variables, operational definitions, and measurements used in this study is offered in Chapter 3.

### **Purpose and Specific Aims**

The purpose of this quantitative study is to examine appraisal of menopause as a stressor and explore the relationship between primary appraisal of menopause, coping strategies, and quality of life in women during perimenopause and menopause. The

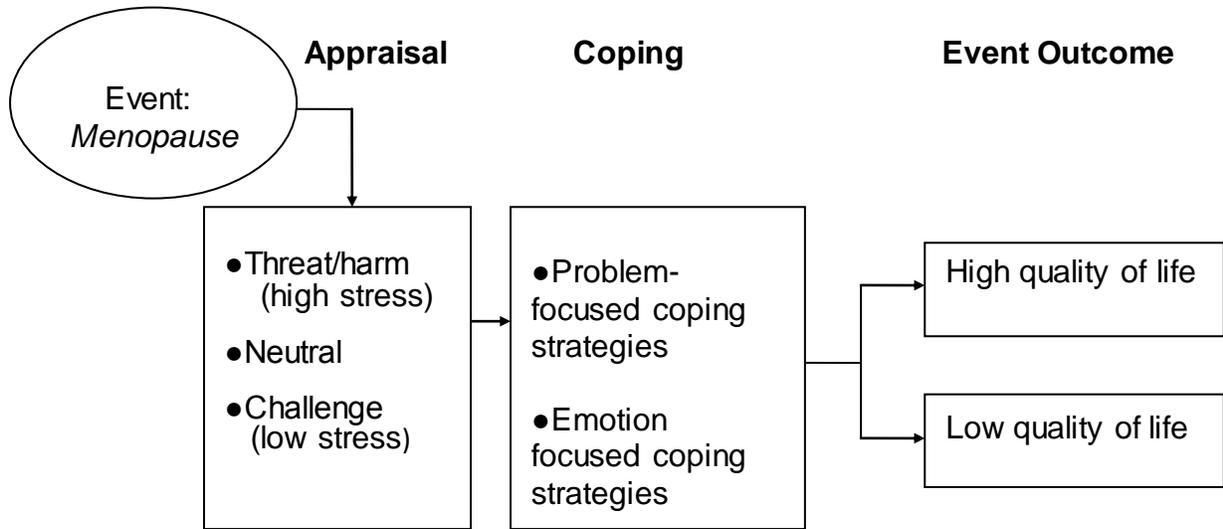
transactional model of stress and coping by Lazarus and Folkman (1984) provides a framework to examine these relationships.

The specific aims are:

1. To examine the characteristics of appraisal of menopause as a stressor.
2. To determine what coping strategies are significantly related to quality of life in perimenopausal and menopausal women.  
  
H<sub>1</sub>: Women in perimenopause and menopause who predominately use problem focused coping strategies will have high quality of life.  
  
H<sub>2</sub>: Women in perimenopause and menopause who predominately use emotion focused coping strategies will have low quality of life.
3. To determine whether coping strategies mediate the relationship between primary appraisal of menopause as a stressor and quality of life.

### **Summary**

This chapter presented the statement of the problem, theoretical foundation, concepts, and purpose and specific aims for this research study. Understanding women's appraisal of menopause as a stressor and the relationship between primary appraisal of menopause as a stressor, coping, and quality of life in women during menopause transition and menopause addresses a gap in the literature and is significant in the counseling, health promotion, and clinical management of women during this stage of life. Chapter 2 will introduce the background and significance of the study and review and synthesize the relevant literature.



(Adapted from Lazarus & Folkman, 1984)

Figure 1-1. Adapted stress and coping model

## CHAPTER 2 LITERATURE REVIEW

This chapter presents the background and significance of the study, introduces relevant terms, and reviews the literature on clinical and public health issues, demographic factors, and treatments for menopausal symptoms.

### **Background**

Menopause is the marker of a significant change in developmental stage for women; however women's appraisal of menopause as a stressor and its impact on quality of life is highly variable (Col, Haskins, & Ewan-Whyte, 2009). Menopause is commonly viewed as a time of poor health both by health care professionals and women themselves (Hardy & Kuh, 2002). The roots of the medicalization of menopause as a deficiency disease have been traced to the late 1930s with the development of the synthetic estrogen diethylstilbestrol (DES) to treat menopause (Bell, 1987). In 1966, the influential book *Forever Feminine* was published, written by gynecologist Robert Wilson. This widely read text described menopause as a disease of hormone deficiency which could result in physical and mental anguish so unbearable as to cause suicide, calling menopause "the horror of this living decay" (p. 43). Wilson (1966) went on to write that a menopausal woman was "in effect, no longer a woman, but a neuter" (p.43) who could be cured with estrogen replacement therapy. Perhaps even the medical term climacteric reflects a historically negative bias toward menopause as it is based on the Latin word *climactēricus* meaning "of a dangerous period of life" (Climacteric, n.d.). In stark contrast to this traditionally disease oriented view, *Menopause the Wise Woman Way* author Susun Weed writes of menopause as a "metamorphosis" and advises women to "Relax and enjoy your hot flashes. Ride them like waves, feel them in your spine, ski the

edges of your flushes, honor the volcanic heat of your core” and counsels women to plan a “Crone’s Crowning” as their identity as a mother dies (Weed, 2007). Current medical and social views on menopause have significantly evolved since the 1960s. Hormone *replacement* therapy is now referred to as hormone therapy in the literature (Shifren & Schiff, 2010) and healthcare providers have begun to recognize that menopause is not an illness but rather a normal life stage (*Menopause Practice*, 2007; Perz & Ussher, 2008). Woods and Mitchell (2010) posit that while it is often assumed menopause is stressful for women, there has been little research done to investigate this assumption.

## **Significance**

### **Menopause, Stress, and Quality of life**

Menopause is a significant physical and psychological event for women that marks the transition from the child bearing years to the nonreproductive stage of life (Bertero, 2003). While some women become menopausal with little difficulty, other women view menopause as a significant stressor with symptoms that disrupt their lives. Menopause is often perceived as inherently stressful and assumed to reduce quality of life (Avis et al., 2009). Stress from perimenopause and menopause, coupled with discomfort from menopausal symptoms including hot flashes, vaginal dryness, insomnia, and depression, can have a significant negative impact on quality of life (Chedraui, San Miguel, & Avila, 2009; George, 2002; Godfrey & Low Dog, 2008; Simpson & Thompson, 2009). Physiologic changes such as osteopenia, osteoporosis, and urogenital atrophy associated with menopause have been reported to significantly correlate with higher stress levels, increased anxiety, and consequently to negatively affect quality of life (Lewis, 2009, Utian, 2005). Quality of life has emerged as an important outcome in

health related studies (Avis et al., 2009), yet while menopause research has gained attention in recent years, there is surprisingly little known about how the stress of menopause and use of coping strategies impact women's quality of life (Col et al., 2009).

Researchers generally agree that an understanding of coping is essential to understanding stress and its physical and psychological effects (Skinner, Edge, Altman, & Sherwood, 2003). Lazarus, DeLongis, Folkman, and Gruen (1985) speculated that there was no issue as significant in the fields of psychology and health as the relationship between stress and adaptational outcomes such as well-being and quality of life. The interaction between stress, coping, and adaptation has particular relevance to healthcare (Wenzel, et al., 2002). Numerous studies have been published on the stress of illnesses, disability, and age related changes and the effects of appraisal and coping efforts on outcomes as diverse as adherence to treatment regimes, depression, physical functioning, well-being, and quality of life (Edgar & Skinner, 2003; Grooms & Leahy, 2002; Holland & Holahan, 2003; Lequerica et al., 2008). As the numbers of menopausal women in the United States increase, the importance of preserving and improving quality of life during this period of life becomes evident.

### **Perimenopause and Menopause**

The terms perimenopause and menopause transition, and menopause and post menopause are often used interchangeably both in the medical and lay press. The U.S. Department of Health and Human Services Office on Women's Health defines menopause as the single day when a woman has not had a menstrual period for one calendar year. The time leading up to this day during which periods become irregular is the menopause transition or perimenopause and the time after this 24 hour period is the

post menopause (*Perimenopause*, 2008). More commonly however, and for this study's purposes, menopause is theoretically and operationally defined as the period of time beginning with the absence of menstrual periods for one year following the loss of ovarian function (National Cancer Institute, 2005). Menopause transition or perimenopause is theoretically marked by a change in menstrual cycle length of at least 7 days due to erratic levels of ovarian secreted hormones. This natural decline in ovarian function typically begins 4 to 8 years before menopause (*Menopause Practice*, 2007), although the reported duration of perimenopause may range from 1 to 10 years (Twiss, Hunter, & Rathe-Hart, 2007). While surgical menopause can occur at any age with bilateral oophorectomy, the average age of spontaneous menopause in the U.S. is 51.4 years with a range of 40 to 60 years. Extremes in age at menopause are rare and usually associated with other medical conditions (*Menopause Practice*, 2007). The health effects of declining estrogen levels and menopause on women have prompted several national studies.

### **Landmark Research and Menopause**

Women's health and menopause have become a focus of research in recent years. The Heart and Estrogen/Progestin Replacement Study I and II, the Women's Health Initiative, and the Study of Women Across the Nation are landmark studies in the area of women's healthcare and menopause.

#### **The Heart and Estrogen/Progestin Replacement Study I.**

The first large randomized placebo-controlled study to examine estrogen use and secondary prevention of coronary artery disease was The Heart and Estrogen/Progestin Replacement Study (HERS-I), funded by Wyeth-Ayerst Laboratories and published in 1998 (National Institutes, 1998). HERS-I considered 2,763 postmenopausal women with

an average age of 67. Participants were randomly assigned to an estrogen/progestin combination therapy or a placebo and treated for approximately 4 years. Contradicting years of observational studies, HERS-I demonstrated no cardio-protective benefits from HRT. The study was criticized as too short, the conclusions generally went unheeded, and the results did not change menopausal treatment or HRT prescribing habits (Furberg et al., 2002).

### **The Heart and Estrogen/Progestin Replacement Study II.**

To counter criticisms of the HERS-I study, open label observational follow-up of 93% of the surviving women was carried out with consent for an additional 2.7 years. HRT was prescribed to study participants at the personal physician's discretion. In the treatment group, patient usage of HRT declined from 81% in the first year to 45% in the sixth year. In the placebo group, hormone usage increased from 0% in the first year to 8% in the sixth year. The Heart and Estrogen/Progestin Replacement Study II (HERS-II) analyzed data from the total 6.8 years and again demonstrated no cardiac benefits from HRT (Hulley et al., 2002), foreshadowing the findings of the WHI which were published within days of HERS-II.

### **Women's Health Initiative.**

The Women's Health Initiative, established in 1991 and sponsored by the National Institutes of Health, was an ambitious, multicenter placebo-controlled study of the effects of HRT on 16,608 healthy postmenopausal women aged 50-79 (Beattie, 2003). There were two arms of the study. The first arm included women with an intact uterus who received either combination estrogen-progesterone therapy or a placebo. The second arm examined unopposed estrogen's effects on healthy women with prior hysterectomies versus placebo (Liu, 2004). A primary goal of WHI was the prevention of

the major causes of morbidity and mortality in menopausal women such as heart disease, breast and colon cancer, and osteoporosis. Both arms of the study were discontinued prematurely when risk thresholds were crossed (Power, Anderson, & Schulkin, 2009). WHI has been criticized in the years since publication for the sample population chosen, issues with study design, and concerns with the publication of findings.

Subjects in WHI were on average 63 years old with two-thirds of the women ages 60 or older, and 21% over the age of 70 at the initiation of the study. Participants had a high rate of obesity, with 30% being morbidly obese and only 30% having a body mass index in the normal range. Despite being designed as a primary prevention study for cardiovascular disease (CVD), a considerable number of subjects (36%) were either hypertensive at enrollment or being treated for hypertension. Subjects were asymptomatic and anestrogenic for approximately ten years at the initiation of the study and 73% had never taken HRT. In contrast, women in clinical settings are virtually always significantly younger than study participants were, are seeking treatment for menopausal symptoms, and are prescribed HT during the perimenopause and early menopause years. Women taking HT have been described as “healthy, wealthy, and well educated” (Grimes & Lobo, 2002, p. 1346). Critics rightly point out the sample population of WHI was not representative of the population to which the results were inferred.

A second sampling issue scrutinized was the fact that of 373,092 women who initiated screening, only 18,845 agreed to consent to randomization, allowing the question of selection bias to be raised. Another troubling aspect was the 40% drop out

rate for study participants in both the treatment and placebo arms (Pederson & Ottesen, 2003). Of note, WHI used initiation of treatment and dosing regimens significantly different than regimens used in clinical practice (Klaiber, Vogel, & Rako, 2005) further decreasing the applicability of the study.

In addition to sampling concerns, study design issues have raised questions about the published research findings. Researchers have leveled criticisms at WHI as being seriously underpowered (Wehrmacher & Messmore, 2005), and statistically flawed for reported outcomes that did not meet the usual criteria for statistical significance (Klaiber, et al., 2005).

A final difficulty with WHI was the decision to announce the results in the *Journal of the American Medical Association* and brief the world news media simultaneously. By placing the popular media in the role of disseminating the findings, sensational headlines were written and misinformation was reported. The dangers of HT became news and the fact that WHI was a prevention trial designed to investigate HT use for disease prevention was lost (Dentzer, 2003; Petitti, 2005).

WHI was reported to have cost up to \$600 million to carry out (Brody, 2002), yet despite the high cost of the study, health care providers and patients alike remain uncertain about hormone replacement use, risks, and benefits due to the complex and contradictory results WHI reported (Williams, Christie, & Siström, 2005).

Research conducted following WHI has examined physician prescribing habits and HT. A 2005 survey of women's health care providers found that 76% of primary care physicians and 40% of endocrinologists were uncertain about risks, benefits, and appropriate prescribing of HT (The Hormone, 2007). Other studies have found over

50% of Obstetrician-Gynecologists believe that HT data are inconclusive (Pinkerton & Wild, 2009) and more than two thirds of surveyed physicians overestimated the risks of hormone therapy (Singh, Liu, & Der-Martirsian, 2005; Williams et al., 2005).

The results of HERS-I, HERS-II and WHI combined to dramatically change women's healthcare. No longer were women being told HT was the panacea for aging, as long held ideas about the benefits of HT were challenged due to the complex and contradictory results WHI reported (Williams et al., 2005).

### **Study of Women Across the Nation.**

The Study of Women's Health Across the Nation (SWAN) was designed as a multi-site, observational, community based cohort study sponsored by the National Institutes of Health to study health and aging in mid-life American women. This longitudinal study enrolled 3,302 racially diverse premenopausal women in seven study centers across the United States and followed them annually from 1997 until January 2009 (Sower, et al., 2006; Swan, 2008). Study aims were to address gaps in knowledge regarding perimenopause and menopause, examine demographic factors affecting menopause, and study the effects of menopause on health, chronic disease, and quality of life. Data from SWAN are now beginning to be published.

### **Demographic Factors and Menopause**

The literature reports that demographic factors may influence the experience of menopause. While studies have sometimes reported contradictory results, demographic characteristics warrant consideration in studies of midlife women.

Age has been reported to influence the experience of menopause with peak vasomotor symptomatology reported between 4 to 6 years after the inception of perimenopause (Hardy & Kuh, 2002). Arbitrary age criteria used in studies of

perimenopausal and menopausal women vary in the literature. SWAN looked at women ages 40-55 (Swan, 2008). The Seattle Women's Health Study used a population aged 35 to 55 (Smith-Dijulio, Woods & Mitchell 2008). A study on menopausal HT use included women ages 50-69 (Ettinger, Grady, Tosteson, Pressman, & Macer, 2003) and women 45-55 were used to propose a classification system for menstrual cycles in the menopause transition (Robertson, Hale, Fraser, Hughes, & Burger, 2008). The literature suggests that a study including women aged 45-60 will likely be representative of most women in perimenopause and menopause (Avis et al., 2001; Hardy & Kuh, 2002) and therefore this age range was chosen for this study.

SWAN found in a cohort of midlife women that race influenced vasomotor symptom experience, with African-American women being the most symptomatic, followed by Hispanic and non-Hispanic Caucasian women, and Asian women being the least symptomatic (Swan, 2008). Avis et al. (2001) found in an analysis of SWAN data that controlling for age, education, health, and socioeconomic status, Caucasian women reported significantly more psychosomatic symptoms of menopause and African American women reported significantly more vasomotor symptoms. Further, women who smoked, had lower socio-economic status, higher body mass index, and were anxious or depressed were more likely to report troubling vasomotor symptoms associated with perimenopause and menopause (Kirn, 2004; Swan, 2008; Thurston, 2009).

### **Clinical Issues and Menopause**

During natural menopause, there is a loss of ovarian follicular activity resulting in increases of follicle stimulating hormone and luteinizing hormone, decreases of estrogen and progesterone, and a cessation of menstruation (George, 2002). As

women age, ovarian senescence and the concurrent decreased levels of estrogen can cause a variety of symptoms which impact and may impair quality of life (Chedraui et al., 2009; Lewis, 2009). Surgically induced menopause is the result of bilateral oophorectomy and menopause immediately results with symptoms of estrogen deficiency reported beginning within days after surgery (*Menopause Practice*, 2007).

Perimenopausal and early menopausal instability of estrogen and progesterone levels are accompanied by a variety of troubling symptoms. Vasomotor symptoms, commonly called “hot flashes” are one of the hallmark symptoms of the menopause transition and early menopause. While the precise cause of vasomotor instability is still uncertain, it has been linked with declining levels of estrogen (*Menopause Practice*, 2007). The literature reports that up to eighty-five percent of women over age 45 experience hot flashes (Bertero, 2003; Col, Guthrie, Politi, & Dennerstein, 2009; Guttuso, Kurlan, McDermott, & Kiebertz, 2003; Lewis, 2009; Utian, 2005). Most women experience vasomotor symptoms that are mild to moderate in intensity; however 10% to 15% of women experience severe symptoms (*Menopause Practice*, 2007). While there are few studies published on symptom experience and surgically induced menopause, anecdotal evidence reveals hot flash rates up to 90% and more frequent and severe vasomotor symptoms associated with rapidly declining levels of sex hormones (Collaris, Sidhu, & Chan, 2010; *Menopause Practice*, 2007).

Hot flashes and night sweats are physiologically the same phenomenon (North American Menopause Society, 2004). Night sweats are often disruptive to sleep and frequent awakening has been linked to mild depression, changes in attention span and memory, irritability, fatigue, and decreased quality of life (Long et al., 2006; Fitzpatrick &

Santen, 2002; Liu, 2004). The majority of menopausal women report vasomotor symptoms for the first two years with a frequency from as often as hourly to as infrequently as weekly or monthly (*Menopause Practice*, 2007). A recent 13 year follow up study found however, that women may experience menopausal symptoms far longer than previously believed, with a mean duration of menopausal symptoms of  $5.2 \pm 3.8$  years (Col, Guthrie, et al., 2009). Up to 26% of women report symptoms lasting 6 to 10 years and 10% of women report vasomotor symptoms lasting more than 10 years after menopause (Utian, 2005). Discomfort from hot flashes is the most common reason menopausal women seek care (Reame, 2005) and these vasomotor symptoms have been shown to have a significant negative impact on quality of life (Barton, Loprinzi, & Waner-Roedler, 2001).

Sleep disturbances are reported by approximately 50% of women aged 40-64 (*Menopause Practice*, 2007). Perimenopausal and menopausal women sleep less, report increased frequency of insomnia, and are more likely to use prescription sedatives. Studies have addressed the relationship between sleep disturbances and hot flashes with varying results (Hsu & Lin, 2005; Minarik, 2009, Woods, N.F. & Mitchell, E.S., 2010). Sleep disturbances and stress however, are closely linked. Many perimenopausal women also report symptoms of stress, irritability, tearfulness, depressed mood, decreased ability to concentrate, and a decreased sense of well-being. While some researchers hypothesize that stress associated with menopause is the result of career, financial, and relationship issues (Woods & Mitchell, 2010; Woods, Mitchell, Percival, & Smith-DiJulio, 2009; Woods et al., 2008), estrogen depletion may have a direct effect on mood. Prospective controlled trials report that estrogen has a

positive effect on mood in women of all ages (North American Menopause Society, 2004). A study by Young and colleagues of women under 40 with major depressive disorders found women on oral contraceptives containing estrogen were less depressed and had higher functioning than either women on progestin only contraceptives or those on no hormone treatments. Women on HT reported increased feelings of well-being compared to the estrogen deficient cohort (Young et al., 2007).

Subjective symptoms of menopause include vaginal dryness, dyspareunia, pain on urination, and urinary frequency and incontinence (Long et al., 2006; Bertero, 2003). Other reported symptoms of menopause attributed to changes in hormone levels include increased perspiration, chills, palpitations, forgetfulness, difficulty concentrating, mood alterations, early awakening, and breast soreness (Butt, Deng, Lewis, & Lock, 2007; Dennerstein, Lehert, Guthrie, & Berger, 2007; Lobo, Beslisle, Creasman, Frankel, & Goodman, 2007). Osteoporosis and its precursor osteopenia, weight gain, palpitations, and thinning of the vaginal mucosa are physiologic changes associated with the later menopausal period (Lewis, 2009; Liu, 2004).

Accelerated bone loss leading to osteopenia and osteoporosis is a potentially serious complication of menopause. The link between estrogen depletion and bone loss has long been recognized. The annual incidence of osteoporotic hip fractures exceeds 1.5 million in the U.S. currently with 80% of these fractures occurring in women (Lane, 2006; *Menopause Practice*, 2007). The fractures that occur in osteoporotic women have a significant effect on mortality and morbidity; up to 20% of patients with hip fractures die in the first year, 33% require nursing home placement after hospital discharge, and fewer than 33% regain pre-fracture levels of physical function (Lane, 2006). Mortality

and morbidity from osteoporosis cost the U.S. healthcare system approximately \$17 billion annually, making prevention of this sequelae of menopause a healthcare priority (Lane, 2006; Maxwell, Maclayton, & Nguyen, 2008).

Cardiovascular disease (CVD) is the number one cause of death of women in the United States regardless of race or ethnicity, causing the death of more women than the next four causes of death (stroke, lung cancer, chronic obstructive pulmonary disease and breast cancer) combined (National Institutes of Health, 2005). One in four women will die from heart disease and the risk for cardiovascular disease increases fourfold during the ten years after onset of menopause (Abernathy, 2008; National Institutes of Health, 2005). Published data have been nonconcordant on the effects of hormone replacement therapy on cardiovascular disease. Observational studies have reported substantially lower rates of CVD in postmenopausal women using HRT (Abernathy, 2008; Hu & Grodstein, 2002, Grodstein, Manson, & Stampfer, 2006). Research has suggested that the “healthy user effect” may be responsible for the findings of decreased cardiovascular disease in observational studies of HRT users, but further study is needed to confirm this theory (Brinton, Hodis, Merriam, Harman, & Naftolin, 2008; Grodstein et al., 2006). The Heart Estrogen Replacement Study (HERS) II and WHI reported conflicting data showing an increase in cardiovascular disease in HRT users especially during the first year of use (Hulley et al., 2002; Writing Group, 2002). Timing of initiation of HRT and its relationship to CVD is unclear as WHI participants were older than the average age of menopause and typically anestrogenic for at least ten years prior to randomization to the HRT group (Writing Group, 2002). Current

literature has reported that HT initiated at the time of menopause may still have a cardioprotective effect (Brinton et al., 2008; Grodstein et al., 2006).

With menopause, endogenous production of estrogen declines causing gradual atrophic changes in the estrogen dependent tissues of the vagina, vulva, and urethra (*Menopause Practice*, 2007). It is estimated that 50% of all menopausal women experience troubling atrophic urogenital symptoms within three years of menopause (Bachmann, Lobo, Gut, Nachtigall, & Notelovitz, 2008). Symptoms include vaginal dryness, itching, irritation, pain, dysparunia, urinary frequency, urinary incontinence, and recurrent urinary tract infections (Bachmann et al., 2008; Long, et al., 2006). Urogenital atrophy and its associated symptoms are largely reversible with estrogen therapy. In addition to the physical toll of menopause, there is a public health burden as well.

### **Public Health Issues and Menopause**

Currently, an estimated 40 million women in the United States are of menopausal age (U.S. Census Bureau, 2004). An anticipated 25 million more women will reach menopause over the next decade, almost doubling the number of women over age 50 by the year 2020 (Col, Haskins, et al., 2009, Utian, 2005, McGinley, 2004; Theroux & Taylor, 2003). On a global scale, it is estimated that there will be 1.2 billion menopausal women worldwide by 2030 (Lewis, 2009). As these staggering numbers of women experience the symptoms of menopause and health problems related to estrogen depletion, the impact on the health care system cannot be ignored.

Approximately sixty percent of all menopausal women will seek treatment at least once in their lifetime for menopausal symptoms and the sequelae of menopause (Williams, et al., 2007). The public health and economic burdens associated with the management of menopausal symptoms is enormous: physician visits, prescription and

over-the-counter medications, laboratory tests, lost work productivity, household expenses, and counseling have been estimated to cost \$43.3 billion annually (Lewis, 2009, Utian, 2005). Additionally, menopausal women are at increased risk for osteopenia, osteoporosis, cardiovascular disease, and breast cancer (Hoerger et al., 1999; Lewis, 2009). Conrad, Mackie, and Mehrotra estimate that medical care for menopause related conditions alone currently cost \$914.3 million per year (2010).

### **Treatments for Menopause**

Menopause is an individual experience with some women making the transition smoothly, while other women have their lives and relationships disrupted by troubling symptoms (George, 2002; Wilhelm, 2002). Therapies that target both vasomotor symptoms and chronic disease prevention are currently hormone based and hormone therapy (HT) is significantly more effective than available non-hormonal treatments for menopausal symptoms (Lewis, 2009).

### **Hormone therapy**

Hormone therapy, still the gold standard treatment for menopausal symptoms and sequelae (Lewis, 2009), commonly refers to estrogen and estrogen/progestin preparations in oral, vaginal, dermal patch, dermal spray or vaginal ring form (Alexander & Moore, 2007).

Prior to 2002 and publication of the WHI results, women were routinely prescribed hormone therapy (then referred to as hormone replacement therapy) for menopausal symptoms to improve quality of life (Nelson, 2005). Approved by the FDA in 1942, oral hormone replacement therapy was the standard of care for menopausal women for 60 years (U.S. Food and Drug, 1997). In 2000, Premarin<sup>®</sup>, a conjugated equine estrogen hormone replacement therapy, was the second most prescribed drug in the United

States (Rymer, Wilson, & Ballard, 2003). In 2002, 6 of the top 100 selling prescriptions were products containing ethinyl estradiol or conjugated equine estrogens (Ruggiero & Likis, 2002). In 2002, treatment for menopausal symptoms and sequelae was radically altered with the publication of results from the WHI.

In 2001, there were over 80 million prescriptions filled for HT. After the publication of WHI, an estimated 65% of women using HT abruptly discontinued it (American College, 2004) and in 2003, only 47.5 million HT prescriptions were written. Oral HT remains the most effective treatment for life disrupting vasomotor menopausal symptoms and within two years of discontinuing HT, one in four women restarted hormone therapy (American College, 2004; Lewis, 2009; Woodward, 2005). HT is contraindicated for a large segment of women such as those with at risk for or with histories of cardiovascular disease, breast cancer, and thromboembolytic events (Lewis, 2009). Currently recognized risks of oral hormone therapy have forced women and their healthcare providers to consider what quality of life is expected from available treatments for menopausal symptoms and to consider alternative therapies (American College, 2004; Woodward, 2005; Utian, 2005).

### **Alternative therapies**

With the recognition of the substantial risks of HT in the WHI study (2002), there has been a surge in interest in alternative therapies for menopausal symptoms. Use of bioidentical hormone therapy (BHT) has gained popularity with patients; however it is a contentious topic in clinical medicine (Boothby & Doering, 2008). Most medical organizations have refuted claims of safety and efficacy made for bioidenticals, most notably the American College of Obstetrics and Gynecology (ACOG). In a 2005 Committee Opinion paper, ACOG stated “Compounded products have the same safety

issues as those connected with hormone therapy agents that are approved by the U.S. Food and Drug Administration and may have additional risks intrinsic to compounding” (p. 1139). The opinion went further to state that compounded products have not undergone rigorous clinical testing for safety and efficacy, and issues with purity, potency, and quality must be addressed (Compounded, 2005).

Proponents of BHT point out that they are “natural”, typically plant derived, and compounded for individual patients based on salivary or blood levels of hormones. Dubious claims have been made that BHTs provide all the traditional benefits of HT and additionally prevent cardiovascular disease and breast cancer, treat hyperlipidemia, premenstrual syndrome, depression, obesity, insomnia, stress, and memory impairment, and increase the length and quality life (Boothby & Doering, 2008). None of these claims have been substantiated with research (Compounded, 2005). Often, providers of bioidentical hormones order salivary hormone level testing to diagnose hormone imbalances. Salivary hormone testing has not been well studied in a clinical setting, casting doubt on its validity for diagnostic purposes (Boothby & Doering, 2008).

Herbal and nutritional supplements are increasingly popular and increasingly controversial. A study of over 2,000 women published in 2003, found that 46% were ever users of herbal and alternative therapies for menopausal symptoms (Keenan, Mark, Fugh-Berman, Brown, & Kaczmarczyk, 2003). By 2008, the Study of Women Across the Nation (SWAN) found up to 80% of menopausal women had tried herbal and alternative treatments (Kauntiz, 2009). There are no randomized placebo controlled studies that indicate efficacy in these products (Newton, et al., 2006) and data from less rigorous studies are inconsistent. Vitamin E, soy products, black cohosh, red clover, and dong

quai are the most widely used herbal and nutritional supplements for menopausal symptoms. Clinical trials have shown either no effectiveness or conflicting results, and the correct dosage and duration of treatment are in dispute (American College, 2004; Geller & Studee, 2005; Kaunitz, 2009; Newton, et al., 2006). Currently, the Food and Drug Administration has no requirements for studies demonstrating efficacy and lack of harm for herbal supplements and these often costly products remain unregulated (Bouchard, 2007).

Even more controversial than bioidentical hormones and herbal supplements is the use of placebos in medical care. A 2005 editorial in the journal *Menopause* advocated the use of “obecalp”- placebo spelled backward- so as not alert the patient they were not being treated with biochemically active medication. In the editorial, Reame (2005) noted that with placebo use, improvement in vasomotor symptoms averaged 30% and a further 25% of placebo users in current clinical trials reported up to a 50% reduction in symptoms. There are numerous studies in which placebo use achieved the same improvement in menopausal symptoms as herbal treatments, however the reduction in symptomatology is still considerable (Geller & Studee, 2005; Kaunitz, 2009; Newton et al., 2006). There is a body of literature on the use of placebos in pain management. Some authors argue that use of placebos in practice is conceptually the same idea as their use in experimental studies (Porzsolt et al., 2004) or that placebos have a “meaning” response that is as valuable as a biochemical action (Moerman, 2006), however there is a gap in the literature on the use of placebos in menopause and serious ethical as well as clinical questions have been raised. The goal

of both traditional and alternative therapies for menopausal symptoms is the same: to maintain and improve health and quality of life.

### **Quality of Life**

Quality of life is a broad term frequently used in healthcare. The Centers for Disease Control (CDC) defines quality of life as “a person or group’s perceived physical and mental health over time” (Centers, 2005, p.1). Quality of life is influenced by feelings of well-being, ability to function independently, and ability to enjoy life (Dennerstein, Lehert, & Guthrie, 2002; Parmet, 2002). Quality of life has come to be one of the yardsticks by which we gauge the effectiveness of a treatment, decide between alternative treatments, and may even be used to consider whether to provide treatment at all. In the evaluation of both function and disease progression, health related quality of life (HRQL) has emerged as an important outcome (Avis et al., 2009).

Quality of life is especially relevant for women in the midlife years (Utian, Janata, Kingsberg, Schluchter, & Hamilton, 2002). The menopause transition and menopause are a time of major physical and psychosocial changes which can affect health and well-being (*Menopause Practice*, 2007; Mishra & Kuh, 2006). Numerous studies have reported the negative health effects directly related to the hormonal changes of menopause including osteopenia, osteoporosis, increased rates of heart disease, vasomotor symptoms, vaginal dryness, and breast tenderness (Hardy & Kuh, 2002; *Menopause Practice*, 2007; Mishra & Kuh, 2006). The literature is not consistent on whether menopause has an effect on psychological health and perception of well-being however (Mishra & Kuh, 2006). Hardy and Kuh (2002) reported no association between menopause and psychological health, while Amore and colleagues (2004), and Dennerstein et al. (2002) found an association between depression and menopause.

Quality of life during this life stage is complex and multidimensional. Culture, personal expectations, social and lifestyle issues, life events, and physical health are all part of what defines quality of life for each woman (Mishra & Kuh, 2006; Utian et al., 2002). Maintaining quality of life is a priority for women through perimenopause and beyond.

### **Summary**

This chapter presented the background and significance of the study, defined relevant terms, presented landmark research on menopause and women's health, and reviewed the literature on clinical and public health issues and current treatments. While historically menopause has been generally viewed as a medical condition in need of treatment, little empirical research was done on menopausal health issues or therapies until the late 1990s and early studies went largely unnoticed. The Women's Health Initiative changed the landscape of research concerning women and menopause. WHI pushed menopausal studies to the forefront of women's health research and quality of life gained traction as a goal for healthcare. The context and historical background presented in this chapter are important in women's health research as menopause has only become a focus of large empirical research studies for about the past ten years. Chapter 3 will discuss the methods used for this inquiry.

## CHAPTER 3 METHODOLOGY

The midrange theory of stress and coping by Lazarus and Folkman (1984) provided a useful framework to define key constructs, derive relational statements, and direct a research study on appraisal of menopause and coping factors that affect quality of life in menopausal women. This chapter presents the transactional model of stress and coping used to underpin this study, and discusses in detail the concepts used in the model, as well as study design and methodology.

### **Theoretical Framework**

#### **Lazarus and Folkman's Transactional Model of Stress and Coping**

The transactional model of stress and coping by Richard Lazarus and Susan Folkman was developed to provide a relational perspective between stressors, the environment, and psychosocial resources, as well as to understand the process of coping with stressful events and factors which affect event and emotional outcomes (Wenzl, et al., 2002). The transactional model specifies a tripartite process of cognitive appraisal, coping response, and outcome.

The term transaction in this context is the concept that the person and the environment influence each other and “join together to form a new relational meaning” (Lazarus & Folkman, 1984, p. 294) as contrasted with an interaction in which each variable retains its individual characteristics. The appraisal of a stressor as a threat for example, is based on the combination of personal factors and environmental factors in a given situation. The Lazarus and Folkman model is not a traditional, static model, but is dynamic and focused on process and change in a specific context (Folkman, Lazarus, Gruen, & DeLongis, 1986; Lazarus & Folkman, 1984, Folkman, 2008). Central to the

theory is the concept that events are perceived uniquely by each individual and this perception influences coping strategies and event outcomes.

According to this theory, if the individual appraises the stressful event as a challenge, has sufficient psychosocial resources, and engages in adequate coping, the outcome will be favorable and positive emotionally. Conversely, if the individual appraises the stressor as a threat, has insufficient psychosocial resources, or uses inadequate coping strategies, an unfavorable outcome and distress will result. The complete model (Lazarus & Folkman, 1984) is recursive and an adverse outcome may start the appraisal and coping process again. The transactional theory of stress and coping has been used to study diverse stressors and outcomes in health care research, with stressors including diabetes, heart disease, infertility, and breast cancer and outcomes ranging from blood sugar levels to cancer survival rates, depression, and well being.

While later published versions of the transactional theory of stress and coping were increasingly complex and detailed (see Appendix A), the original model was comparatively simple and linear (see Figure 3-1) (Lazarus & Folkman, 1984; Wenzel, et al., 2002). In this study, an adapted version of the 1984 model is used.

### **Historical Perspectives on the Transactional Theory of Stress and Coping**

Lazarus and Folkman published the transactional theory of stress and coping in the book *Stress, Appraisal and Coping* in 1984. This seminal work on stress and coping theory outlined a model in which an event (stressor) resulted in an appraisal of that event as a harm, threat, or challenge. The appraisal of the stressor was influenced by personal and situational resources and led to coping efforts. Coping efforts could be classified according to function (problem or emotion focused coping) and resulted in

either a favorable event outcome and positive emotions or an unfavorable event outcome and distress. An unfavorable outcome and distress resulted in a recursive return to appraisal of stress in the original model (Lazarus & Folkman, 1984). Lazarus and Folkman examined and described the components of the concepts of event, appraisal, coping, and outcome and detailed the relationships between these concepts. Researchers began to further adapt the model and the original model became the basis for modified and more complex versions (Folkman, 1997; Folkman & Greer, 2000; Wenzel, et al., 2002). The newer more elaborate models evolved from the same basic concepts, but added levels of detail not present in the original depiction.

### **Lazarus and Folkman's Transactional Model of Stress and Coping Concepts**

The transactional model of stress and coping begins with an event or stress and the core of the model contains two processes: appraisal and coping. The 1984 model examined the stressor and the effects of appraisal, coping effort, and personal and situational factors (psychosocial resources) on event and emotional outcomes (Lazarus & Folkman, 1984).

#### **Stressor**

In the model, stressors can be many things from events as catastrophic and global as natural disasters and war, to events as personal as the death of a loved one, work related issues, test taking, or illness. Even seemingly inconsequential daily hassles of life and life events such transitions of aging can be viewed as stressors in this model (Lazarus & Folkman, 1984). Historical and current healthcare literature includes research with stressors as varied as diabetes, spinal cord injury, breast, lung and gynecological cancers, abortion, arthritis, and menopause (Bauld & Brown, 2009; Clarke & Goosen, 2009; Deeks, et al., 2008; Down-Wamboldt & Melanson, 1998;

Holland & Holahan, 2003; Lequerica, et al., 2008; Major et al., 1990; Manne et al., 2008).

Stress resulting from the stressor is defined as “a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (Lazarus & Folkman, 1984, p. 21). Stress is not caused by an environmental event (stressor) but is a process caused by a discrepancy in the individual’s assessment of the event and capacity to accommodate, abate, or change the demands of the stressor to achieve a positive outcome (Cercle, Gadea, Hartmann, & Lourel, 2008; Lazarus, et al., 1985).

There is a paucity of research concerning the degree to which women view menopause as stressful. Woods et al. (2009) reported that negative appraisals of aging in the menopausal transition was associated with higher stress levels, but factors such as employment, depression, and perception of health status were more significant in their analysis than perceived severity of hot flashes in the perception of stress. Studies of rural women have found menopausal appraisal was affected by the social context of their lives. Limited access to care and menopause resources, geographical isolation, multiple role strain, and poverty were factors contributing to the appraisal of the intensity and significant negative life impact of menopause for rural women (Leipert & Reutter, 2005; Price, Storey, & Lake, 2008). In a later study of the relationships among stress, distress, emotional intelligence, and menopause, women with more positive attitudes toward menopause experienced less stress, less distress, and fewer menopausal symptoms than did women with negative views of menopause (Bauld & Brown, 2009). Whether an event is seen as threatening or not is based on an appraisal of the

significance of the event and an evaluation of whether coping resources are available and sufficient (Lazarus & Folkman, 1984). The stressor of interest in this study is menopause.

## **Appraisal**

Appraisal is a central concept to the transactional model of stress and coping and appraisal of a situation is unique and individual and “an integral process within the stress and coping paradigm” (Kessler, 1998, p. 73). The cognitive evaluation or appraisal of a stressor is an interaction between the individual (with unique personal characteristics and resources) and the environment. Lazarus and Folkman (1984) employed a broad focus of appraisal and conceptualized it as consisting of two components: primary appraisal during which the stressor is assessed as being threatening, neutral, or challenging, and secondary appraisal, which takes into account what coping responses are possible, how likely it is the coping response will be effective, and how able the individual is to apply the coping response (Lazarus & Folkman, 1984).

Although Lazarus and Folkman (1984) characterized appraisal using the terms primary and secondary, they stated neither type of appraisal was more important nor precedes the other in time. They declined to change the terminology however, due to common usage in the literature. Both primary and secondary appraisal lead to an effort to cope with the stressor and influence coping efforts and outcomes. For the purposes of this study, only the concept of primary appraisal was measured and analyzed.

Primary appraisal is the evaluation an individual makes about the personal significance of the stressor (Wenzel, et al., 2002). Lazarus and Folkman considered the construct of primary stress appraisals to include the judgment that an encounter is

irrelevant, benign-positive or stressful. Stressful appraisals take three forms: harm/loss, threat, and challenge. Harm and threat appraisals are typically characterized by negative emotions including fear, apprehension, and anger. With harm appraisals, the damage has already been done, whereas with threat appraisals, the damage is anticipated (Lazarus & Folkman, 1984). Individuals making challenge appraisals identify the possibility of mastery or gain from the stressor and are associated with positive emotions such as anticipation and excitement. The concepts of harm/threat and challenge are separate but related and appraisals of a stressor as a harm/threat or a challenge are not necessarily mutually exclusive (Lazarus & Folkman, 1984).

In measuring primary appraisal, Lazarus and Folkman discussed measures for stressful appraisals of harm/loss, threat, and challenge only. Kessler (1998) argued that the appraisal of a stressor as neutral or benign should be included in research studies of primary appraisal to account for the assessment of an event as non-stressful or positive with no degree of apprehension. Since there is little in the published literature about appraisal of menopause as stressful, this study used the mutually exclusive categories of negative harm/threat, neutral, and positive challenge to assess primary appraisal of menopause incorporating Kessler's proposal of including a neutral assessment in research.

In a 2008 study of women's risk perceptions of menopause, menopausal women viewed menopause as a more significant event than premenopausal women did. In assessing perceived severity of symptoms, women reported milder symptoms than expected. Further results reported incongruence between women's perceived risks of future diseases and actuality, with women underestimating the risks of heart disease

and overestimating the risk of breast cancer (Deeks, et al., 2008). A study of menopause in rural women found that menopause was perceived as threatening with subjects reporting a new awareness of aging and death, a fear of illness and loss, and the severity of symptoms as “frightening” (Price, et al., 2008, p. 506).

Symptom experience and symptom severity affect appraisal of menopause yet empirical measures of menopausal symptoms may not be congruent with the personal evaluation of symptom severity. Studies of correlation between subjective hot flash severity and objective measures of hot flash duration and frequency found they were only weakly correlated (Carpenter & Rand, 2008; Keefer & Blanchard, 2005).

These studies further validate the use of personal perceptions as opposed to empirical measures in appraisals of stressors (Youngblut & Casper, 1993). This study used self reported personal perception of menopause and the stress of menopause to measure primary appraisal. Appraisal shapes the reaction of a person to any encounter and significantly affects coping strategies employed to deal with the stressor,

### **Coping efforts**

The ways people cope with stress affects psychological, social, and physical well-being (Folkman & Lazarus, 1980). Lazarus and Folkman defined coping efforts as thoughts and behaviors used to handle the demands of events appraised as stressful which tax or exceed the resources available for coping. Coping efforts begin when a stressor is assessed (Folkman & Moskowitz, 2004; Lazarus & Folkman, 1984). Coping efforts are situation specific strategies used to manage the stressor, are process rather than trait oriented, and conceptually can be classified according to the functional categories of emotion focused coping and problem focused coping that are used in this study (Lazarus & Folkman, 1984).

The assessment of a stressor as harmful provokes negative emotions, which may be strong; therefore one of the first tasks of coping is to reduce these emotions. Emotional regulation to reduce negative emotions can be accomplished with actions such as venting, avoidance, seeking social support, and denial (Folkman & Moskowitz, 2004; Lazarus & Folkman, 1984; Wenzel, et al., 2002). Several studies based on Lazarus and Folkman's model examining social support seeking and venting were found in the literature. Carver, et al. (1989) reported gender differences in coping, with women having greater use of social support and venting than did men, and concluded that the male dominated problem-focused strategies were better for adaptation. A provocative article examining the concept of gender and coping strategies argued that a feminist perspective was needed in coping research to more accurately portray the strengths and weaknesses of women under stress and advocated the view that neither problem focused coping nor emotional regulation strategies were inherently better (Banyard & Graham-Bermann, 1993). In women with breast cancer, emotion-focused coping was found to be significantly associated with increased length of survival (Reynolds et al., 2000), yet in patients with myocardial infarction, problem focused coping was associated with improved outcomes and emotion focused coping was associated with increased psychological distress (Chung, Berger, Jones, & Rudd, 2008). For caregivers of Alzheimer's patients, seeking social support was recommended to reduce feelings of isolation and grief (Sanders, Ott, Kelber, & Noonan, 2008). Price, et al., (2008) reported that menopausal women living in rural areas sought social support and sharing experiences with others to cope. Research supports the view that emotional focused coping may be both functional and dysfunctional. The process

may be positive if social support and venting result in sympathy, understanding, information, or assistance. However, when venting is focused on emotions, distress may be increased and problem management may be delayed, negatively affecting adaptation (Carver, et al., 1989; Lazarus & Folkman, 1984).

Problem focused coping is the use of active coping strategies such as gathering information and planning a course of action. In studying stressors, it is necessary to recognize that some threat situations may present few options for problem management and resources such as income or ability to access medical care may be finite (Lazarus & Folkman, 1984). Active problem solving has been found to be associated with more positive outcomes (Carver, et al., 1989). In diabetes research, use of active coping strategies led to improved metabolic control (Grey, 2000) and reduced depression (Clarke & Goosen, 2009). In women with gynecological cancers, planful problem solving was associated with less depressive symptoms (Manne et al., 2008). No published studies were found on active coping and menopause in the current literature. A study by Graziottin (2005), however, suggested active coping be encouraged in the post-Women's Health Initiative era of misinformation and changing recommendations for menopausal symptom treatment. The researchers advocated for women to actively take charge of their health to maintain and improve quality of life. Further studies by Lazarus and Folkman suggest that the process of coping with a stressor often includes both problem and emotion focused coping methods (1980, 1985). Problem focused coping strategies were employed most often to situations appraised as amenable to change and emotion focused coping strategies were used frequently in situations appraised as

unchangeable (Folkman & Lazarus, 1985; Folkman & Lazarus, 1980). Both problem focused and emotion focused coping strategies were examined in this study.

## **Outcomes**

No matter how they are conceptualized, the key importance of appraisal and coping processes is that they affect adaptational outcomes. Three fundamental outcomes are functioning in work and social living, quality of life, and physical and mental health. Lazarus and Folkman described these event outcome possibilities as either favorable with positive emotions or as unfavorable with distress in which case the appraisal process begins again as the individual attempts to work toward a favorable outcome of the event (Lazarus & Folkman, 1984). The event outcome in this study is quality of life.

Lazarus and Folkman's transactional theory of stress and coping provides a framework to define and measure the concepts of appraisal of an event, examine coping responses and determine their effects on outcome. Research based on a theoretical and conceptual model strengthens the study and contributes to nursing science (Fawcett, 1995).

## **Research Design**

This study utilized a non-experimental, prospective, cross-sectional design based on Lazarus and Folkman's theory of stress and coping. A convenience sample of women was offered the opportunity to complete a survey anonymously. One hundred and fifty women participated and were included in the study.

## **Population and sample**

Participants were recruited from an Ob-Gyn practice located in Nassau County in northeastern Florida (see Appendix B). Inclusion criteria for this study were: females

ages 45 to 60; able to read and write in English; and willing to participate in the study. All the returned study questionnaires that met the age criteria were included in the data analyses.

A convenience sample was used for the study. A convenience sample is the most common type of non-probability sample (Portney & Watkins, 2000) and allowed for familiarity with the setting for the researcher. Since the target population was women in menopause transition and menopause, a sample of women ages 45-60 seeking care from an obstetrician gynecologist was chosen as representative of the target population after a review of the literature (Ettinger, et al., 2003; Portney & Watkins, 2000; Robertson et al., 2008; Swan, 2008; Smith-Dijulio, et al., 2008). The demographic data of patients at the Ob-Gyn office was similar to those reported for the area in the 2000 census (U.S. Census Bureau, 2009) (see Appendix C). All accessible women who met the study criteria and completed the survey were included in the study to minimize selection biases (Hulley et al., 2001).

Power analysis was conducted with  $\alpha = .05$ , medium effect size and 15 predictor variables. The necessary sample size was calculated as 139 subjects (Faul, Erdfelder, Lang, & Buchner, 2007, Green, 1991). To insure adequate power and allow for incomplete surveys, the study continued until 150 surveys were returned.

Participants were purposefully recruited from the Ob-Gyn practice. A flyer was posted in the waiting room of the Ob-Gyn office describing the study and offering all interested women aged 45-60 a survey packet.

### **Recruitment Strategies**

Participants were recruited to complete the questionnaires. A flyer was posted in the waiting room of the office to inform interested women of the study opportunity.

Potential participants were offered the opportunity to fill out the questionnaires, place the forms in an unmarked manila envelope included in the packet, and deposit the envelope in the slot in a locked box in the waiting room of the practice. A \$5 gift card to Wal-mart was included in the packet for participants to keep whether or not they fully completed the survey. No protected health data or identifying information was collected on the survey forms.

### **Setting**

The study was conducted exclusively in the Ob-Gyn office located in northeast Florida in Nassau County. In the most recent published data, Nassau County had a population of 68,000 of which 50% was female, 87% were white not-Hispanic, 8% were African American, 3% were Hispanic, and 2% Asian, and other. County wide, the median income for households was \$59,072, and 85% of the population reported at least obtaining a high school diploma and 20% reported holding a bachelor's degree or higher.

### **Study Protocol**

Participants were given the following questionnaires in the study packet to complete: a demographic data form (Demographic Information Tool), the Menopause Appraisal Tool, the Menopause Stress Tool, the Menopausal Symptom Bother Scale, the Carver and Scheier COPE Scale (COPE, 2007), and the Utian Quality of Life Scale (Utian, et al., 2002).

### **Protection of Human Subjects**

This study was reviewed by the University of Florida Institutional Review Board. The study was approved as an exempt study prior to the collection of data.

## **Management of Data**

Packets were removed from the locked box and numbered by the principal investigator. The data were then entered into SPSS 16 for storage and analysis.

## **Instruments and Measures**

There were several instruments used in this study. Researcher developed instruments were the Demographic Information Tool (DIT), Menopause Appraisal Tool (MAT), Menopause Stress Tool (MST), and Menopause Symptom Bother Scale (MSB). Previously published and validated instruments were the Carver and Scheier COPE Inventory (complete version), and the Utian Quality of Life Scale (UQOL).

### **Demographic Information Tool**

The Demographic Information Tool (DIT) solicited data on age, race, gravida, para, current marital status, educational level, household income, height, weight, medication use including anti-depressants, hormones, herbal products, and vitamins, menopause status, oophorectomy status, and current and past cigarette use (See Appendix D).

### **Menopause Appraisal Tool**

The Menopause Appraisal Tool (item 13 on the DIT) is a researcher developed single-item question that asked subjects to appraise menopause using the mutually exclusive categories of a negative harm/threat, a positive challenge, or a neutral event. The categories of harm and threat were combined in this study to create appraisal categories of menopause as a negative, neutral, or positive event. The appraisal of stress has been operationalized into mutually exclusive primary appraisal categories previously in published research (Gass & Chang, 1989; Kessler, 1998).

Youngblut and Casper (1993) have affirmed the validity and reliability of the use of single item indicators in nursing research stating “whenever nurse researchers are interested in individuals’ perceptions of a particular situation, a global single-item indicator may be a more valid measure of the concept of interest” (p. 459). Reliability and validity are reported to be generally acceptable for global single-item indicators and demonstrate consistency across studies irrespective of response format (Youngblut & Casper, 1993). Further, Youngblut and Casper recommend constructing a single item question rather using one item from a multi-item scale.

### **Menopause Stress Tool**

The Menopause Stress Tool (item 14 on the DIT), developed by the Principal Investigator (PI), is a single-item question (Youngblut & Casper, 1993) asking subjects to rate “how stressful you think menopause is” on a Likert-style scale of 1 (not at all stressful) to 5 (extremely stressful).

### **Menopause Symptom Bother Scale**

Menopausal Symptom Bother Scale (item 19 on the DIT), developed by the PI, is a single item question (Youngblut & Casper, 1993) which followed a menopausal symptom list asking subjects to rate “are these symptoms troubling or bothersome?” on a Likert-type scale of 0 (no) to 4 (extremely bothersome).

### **Carver and Scheier COPE Inventory**

The Carver and Scheier COPE Inventory (COPE) (1989) was developed to assess a wide range of coping responses; some adaptive, some maladaptive (See Appendix E). COPE was based on the early work concerning stress and coping by Lazarus in the late 1960s and later work by Lazarus and Folkman (1984). Lazarus and Folkman developed a scale titled Ways of Coping to measure coping thoughts and actions.

Rooted in the scale were the two general types of coping: problem focused and emotion focused (Carver, et al., 1989). Carver, Scheier and Weintraub (1989) offered the judgment that those categories were too simplistic and that the actions involved in type of coping was distinct and therefore should be measured separately. Accordingly, the Carver and Scheier COPE Scale was developed with 13 theoretically distinct scales from 15 coping strategies. Convergent and discriminant validity and reliability has been demonstrated for the COPE inventory (Carver et al., 1989) and the tool has been widely used in research. Coping strategies are measured on a Likert- type scale of 1 (I usually don't do this at all) to 4 (I usually do this a lot). Scales are summed with higher scores indicating greater use of that coping strategy.

There are 5 coping strategies comprising problem focused coping: use of instrumental social support, active coping, restraint, suppression of competing activities, and planning (Carver, et al. 1989).

- Use of instrumental social support is seeking advice, information, or help in dealing with the stressor.
- Active coping is the process of taking direct action or increasing the effort to remove the stressor or mitigate its effects.
- Restraint coping is a passive strategy that involves waiting for an opportune moment to act on the stressor.
- Suppression of competing activities is putting other activities aside, avoiding distraction and maintaining focus on the stressor to the exclusion of other duties.
- Planning involves thinking about the stressor and preparing a course of action to cope with the stressor.

There are 10 emotion focused coping strategies: positive reinterpretation and growth mental disengagement, focus on and venting emotions, denial, religious coping,

humor, behavioral disengagement, use of emotional social support, substance use, and acceptance (Carver, et al., 1989; Cope, 2007).

- Positive reinterpretation and growth is a coping mechanism focused on managing distress emotions. It occurs when the subject re-frames the stressful situation in positive terms. Theoretically, positive reinterpretation leads to active, problem-focused coping actions.
- Mental disengagement is an emotion focused coping strategy that serves to distract the person from thinking about the outcome the stressor is obstructing. Mental disengagement can include escapism by daydreaming, sleeping excessively, or distraction with TV.
- Focus on and venting emotions may be adaptive if it occurs for a short interval however it may not be functional if it reinforces distress and paralyzes the person from moving forward in coping.
- Denial is the refusal to acknowledge that the stressor exists.
- Religious coping is an increased engagement religious activities. It is a response that may serve as emotional support or a way to reframe the situation in a more positive light.
- Humor reframes the stressor in a less threatening way by making jokes about it.
- Behavioral disengagement has been associated with helplessness. Behavioral disengagement includes reducing efforts to deal with the stressor and giving up. It is prone to occur when poor outcomes are expected.
- Use of emotional social support includes getting sympathy, empathy, and moral support. Use of emotional support can be positive but may be maladaptive if it leads into venting.
- Substance use is a tactic where the person uses alcohol or drugs to disengage from the stressor.
- Acceptance is acknowledgement of the reality of the stressor.

For the purposes of this study, the 15 coping strategies were considered individually to more fully explore coping strategies and their relationship to quality of life in the study population.

## **Utian Quality of Life Scale**

The Utian Quality of Life Scale (UQOL) (2002) is a 23 item questionnaire developed to measure the outcome variable quality of life specifically during the midlife years (Utian, et al.) (See Appendix F). Utian and colleagues emphasized the UQOL measures quality of life where other tools in the genre are mainly life phase or disease symptom inventories and developed a scale to measure the perception of well-being and quality of life as separate from menopausal symptoms in perimenopausal and menopausal women. The UQOL is practical to use and was reported to be psychometrically sound and validated on a cross-sectional basis with further longitudinal studies pending.

Quality of life is a construct without a precise quantification in the medical literature. Utian et al., (2002) incorporated the construct of well-being and the subscales of occupational quality of life, health quality of life, emotional quality of life, and sexual quality of life to form a total quality of life score for this population. Scored on a 5 point Likert-type scale from 1 (not true of me) to 5 (very true of me), results are calculated as a means for each factor plotted on a scale of standard deviations above and below the mean for each subscale. Two standard deviations below the mean indicate substantially lower QOL and two standard deviations above the mean indicate substantially higher QOL.

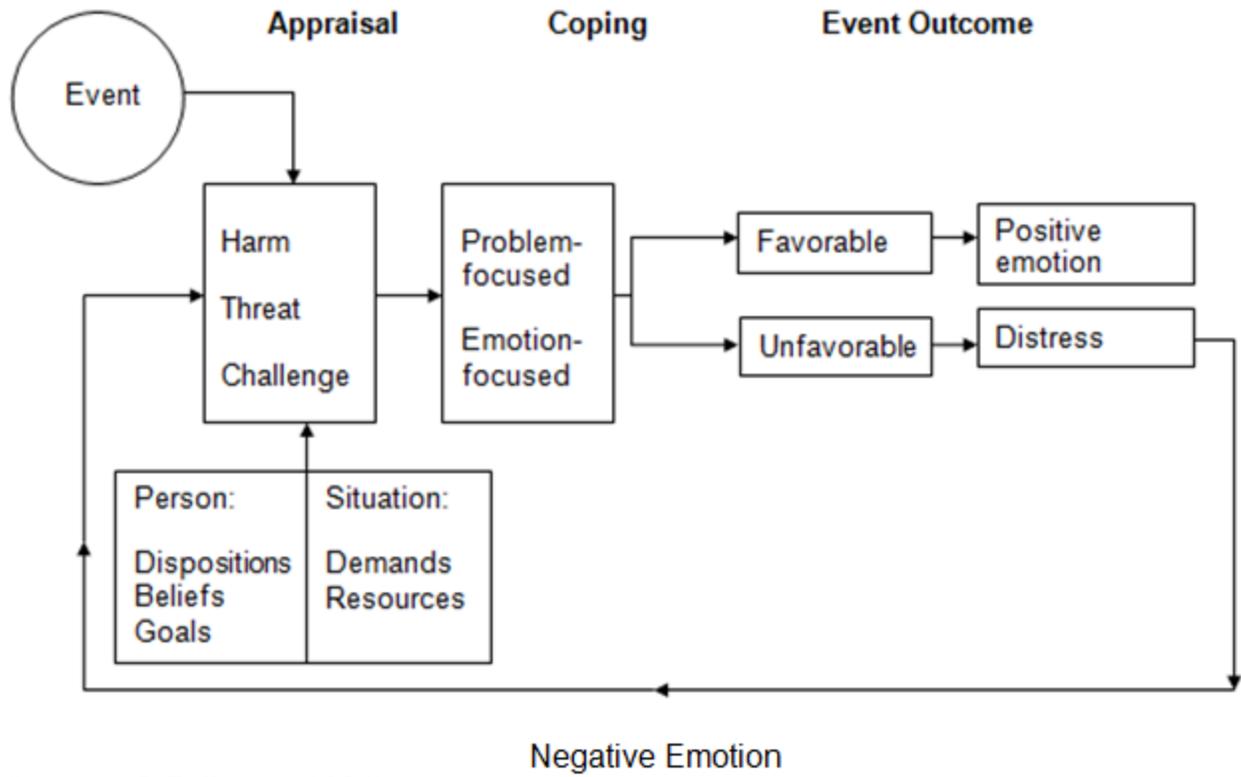
## **Study Variables**

The study variables of interest are appraisal of menopause, coping strategies, and quality of life. The research model concepts and application to this study are presented in Table 3-1. The research aims and hypotheses, independent and dependent

variables, instruments, statistical tests, and application to this study are presented in Table 3-2.

### **Summary**

This chapter presented Lazarus and Folkman's theoretical model which underpinned this study, discussed the model concepts, reviewed the study design, protocols and instruments, and listed the study variables. The results of the study are given in Chapter 4.



(Lazarus & Folkman, 1984)

Figure 3-1. Lazarus & Folkman stress and coping model 1984

Table 3-1. Transactional model of stress and coping concepts and application to study

Concept	Definition	Operational Definition
Event	Events or stressors are demands made by internal or external environment that upset homeostasis and affect physical and psychological well-being	Perimenopause and Menopause: Women aged 45-60
Appraisal	Primary appraisal - evaluation the individual makes about the personal significance of the stressor or the event (harm/threat/challenge).  Secondary appraisal - determination of what can be done about the event	Primary Appraisal: Menopause perceived as  negative harm/threat  neutral  positive challenge
Coping	Generalized ways of reacting to a stressor; coping is the process of executing a response to the appraisal of a stressor. Coping strategies can be generally classified as problem focused coping or emotion focused coping	Problem focused coping: use of instrumental social support, active coping, restraint, suppression of competing activities, planning  Emotion focused coping: positive reinterpretation and growth, mental disengagement, focus on and venting of emotions, denial, religious coping, humor, behavioral disengagement, use of emotional social support, substance use, acceptance,
Outcome	Event outcome: Favorable or unfavorable	Quality of life (QOL) High quality of life or low quality of life

(adapted from Wenzel, L., Glanz, K., & Lerman, C. 2002)

Table 3-2. Study aims, variables, instruments and statistical tests

Research aims and hypotheses	Independent (IV) & Dependent Variables (DV)	Instruments	Statistical Tests
<b>Aim 1:</b> To examine the characteristics of appraisal of menopause as a stressor		Demographic Information Tool Menopausal Appraisal Tool Menopausal Stress Tool Menopausal Symptom Bother Scale	Descriptive univariate statistics  Chi-square  ANOVA
<b>Aim 2:</b> To determine what coping strategies are significantly related to quality of life in perimenopausal and menopausal women <b>H<sub>1</sub>:</b> Women in perimenopause and menopause who predominately use problem focused coping methods will have high quality of life <b>H<sub>2</sub>:</b> Women in perimenopause and menopause who predominately use emotion focused coping methods will have low quality of life	<b>IV:</b> Coping strategies  <b>DV:</b> Quality of life  <b>IV:</b> Problem focused coping methods  <b>DV:</b> Quality of life  <b>IV:</b> Emotion focused coping methods  <b>DV:</b> Quality of life	Carver & Scheier COPE Scale  Utian Quality of Life Scale	Pearson's Correlation  Multiple regression
<b>Aim 3:</b> To determine whether coping strategies mediate the relationship between primary appraisal of menopause as a stressor and quality of life	<b>IV:</b> Appraisal of menopause (harm/threat, neutral, challenge) <b>Mediator:</b> Coping strategies <b>DV:</b> Quality of life	Menopause Appraisal Tool Carver & Scheier COPE Scale Utian Quality of Life Scale	Path analysis- Baron & Kenny method  Bootstrap method to test for mediation

## CHAPTER 4 RESULTS

The purpose of this study was to describe the characteristics of perimenopausal and menopausal women's appraisal of menopause as a stressor, to determine what coping strategies were significantly related to quality of life in perimenopausal and menopausal women and to determine whether coping strategies mediated the relationship between the type of primary appraisal of menopause and quality of life. Results of descriptive statistics of the sample and major study variables are presented in this chapter as well as the study results.

### **Statistical Analysis Approach**

Data were entered in the Statistical Package for the Social Sciences version 16.0 (SPSS Inc. Chicago, IL). Data were cleaned and accuracy of data entry was verified using a double entry method for 50% of the questionnaires. The error rate was less than 2% thus the entire data set was not checked. After the data were entered, demographic data were examined for duplicates to minimize the possibility that a subject filled out more than one survey. No surveys were found to have exactly duplicated demographic data and independence of the data was therefore assumed. When a participant response was ambiguous between two points on a scale, the score that was entered was the value closest to the middle value of the respective scale. Since all model scores were a summary value of multiple items, this technique allowed that participant's data to be used. Most surveys had no missing data and no pattern was detected to the data that was missing. In terms of demographic data, one survey lacked educational level, three surveys omitted income level, and five surveys were missing data on weight.

A priori, alpha was set at 0.05 and a medium effect size was chosen. Power analysis was conducted using G\*Power 3 (Faul, et al., 2007) assuming 15 independent variables,  $\alpha = 0.05$ , and  $\beta = 0.8$ . A minimum sample size of 139 was determined to be required for path analysis of the data. To allow for missing data and incomplete questionnaires, a target sample of 150 was set.

### **Univariate Descriptive Statistics**

Univariate analysis was carried out for each key variable in the data set. Measures for central tendency illustrating the typical value of a variable were calculated. A mean was calculated for scale level variables. Frequency results were examined to find the mode for nominal data (Munro, 2005).

Measures of dispersion describe the variability of a set of data. Data can be homogeneous with low variability or heterogeneous with high variability. Standard deviation and minimum and maximum scores are widely used measures of variability around the mean and are reported for the study data (Munro, 2005).

In addition to measures of central tendency and dispersion, distribution of the data is an important feature. Histograms were run to examine whether the data were normally distributed (symmetrically bell-shaped without skew). Significantly skewed data indicate that the mean is not an accurate measure of central tendency for the set of data (Munro, 2005).

### **Bivariate Analysis**

After univariate analyses were carried out, bivariate analyses of the independent and dependent variables were run. Chi-square was used to examine categorical data and is the most commonly reported nonparametric statistic (Munro, 2005). Chi-square, contingency coefficients, and cross-tabulations were used to examine appraisal of

menopause and categorical variables. Cramer's  $V$  was used to determine the strength and direction of the relationship as one or more of the categorical variables contained more than two categories (Field, 2005).

The differences between women who appraised menopause as a harm/threat, neutral, or challenge and scale variables were examined using ANOVA. ANOVA is robust to violations of assumptions and is useful to determine if differences exist between two or more groups on one dependent variable (Field, 2005).

### **Multivariate Analysis**

Pearson's correlation coefficient and multiple regression were used to determine what coping strategies were significantly related to quality of life. Pearson's correlation can be used to determine how strongly and in what direction the IV and the DV are related. The reported  $r$  value lies between  $-1$  and  $+1$  with  $+1$  indicating a perfect positive relationship,  $0$  indicating no relationship and  $-1$  indicating a perfect negative relationship. Effect sizes generally can be classified as: small effect  $r = .1$ , medium effect  $r = .3$ , and large effect  $r = .5$  (Field, 2005).

Multiple regression was used to examine whether high quality of life was associated with use of problem focused coping methods and low quality of life was associated with use of emotion focused coping methods as stated in the hypotheses. Regression analysis allows the researcher to predict outcomes based on known data using a linear equation (Munro, 2005).

Path analysis was used to determine if coping strategies mediated the relationship between appraisal of menopause and quality of life. Path analysis, an extension of multiple regression, is a methodological tool that allows the researcher to examine hypothesized causal factors effect on an outcome. The path analysis model has two

types of effects. The first effect is a direct effect between the independent variable (IV or predictor variable), in this study appraisal of menopause, and the dependent variable (DV or outcome variable); quality of life. The second type of effect is indirect. The independent variable (appraisal of menopause) has an effect on the dependent variable (QOL) through other mediating variables. In this study, mediating variables are hypothesized to be coping strategies. One model frequently used to test for mediational relationships is the Baron and Kenney model (1986).

The Baron and Kenney mediational model is a model in which the mediator variables influence the relationship between a predictor variable (IV) and an outcome variable (DV). Mediator variables specify how or why the relationship between the independent variable and the dependent variable occurs (Baron & Kenny, 1986; Lindley & Walker, 1993). To test for mediation, three regression equations are required. First the outcome variable (Y) is regressed on the predictor variable (X). If this relationship is significant ( $C_1$ ), the mediator variables (M) are regressed on the predictor variable. The third equation regresses the outcome variable simultaneously on the predictor and the mediator variables (Lindley & Walker, 1993). Baron and Kenny (1986) state that the mediator function is supported when findings are that the regression of the mediator on the predictor variable is significant (path A), the regression of the outcome variable on the mediator variables is significant (path B), and after controlling for paths A and B, a previously significant relationship between the predictor variable and the outcome variable ( $C_1$ ) is no longer significant ( $C_2$ ) (see Figure 4-1).

When the hypothesis includes mediation by multiple mediators, Preacher and Hayes (2008) advocate the use of bootstrapping to obtain confidence limits for specific

indirect effects. Bootstrap methods take a sample size  $n$  of cases with replacement from the original sample allowing a case to potentially be selected once, multiple times, or even not at all in the analysis. This process is commonly repeated 1,000 times yielding estimates of the total and specific indirect effects (Preacher & Hayes, 2008).

Bootstrapping (also called re-sampling) can be used to test for significance of an indirect relationship in multiple mediator models and confirm results from the path analysis (see Figure 4-2).

The bootstrapping method has several statistical advantages to simple single mediation models. Bootstrapping allows for a single multiple mediation model to determine if an overall effect exists, Second, bootstrapping allows determination to what extent specific mediator variables mediate the direct effect of the independent variable on the dependent variable. Third, a multiple mediation model reduces the bias due to omitted variables. Finally, a multiple mediation model allows for the determination of the relative strength of the proposed mediator variables (Finney, 2010; Preacher & Hayes, 2008).

### **Description of the Sample**

The sample consisted of community dwelling women aged 45-60 who voluntarily filled out the study questionnaire available in an Ob-Gyn office in northeastern Florida. A total of 150 women participated in the study and 100% of the surveys were included in the data analyses.

Demographic characteristics of the sample are summarized in Table 4-1. Women were an average 52.5 years of age (SD=  $\pm 4.8$  years); several months past the average 51.4 age of menopause in the U.S. (*Menopause Practice*, 2007). The majority of women in the sample were in the upper end of the body mass index *overweight* category with a

mean BMI of 28.5 (SD= $\pm$ 7.0) with BMI ranging from 17-48. Only 35.2% of the sample had a BMI in the normal range (Body Mass, 2009) (see Appendix G for BMI categories). The majority of respondents were Caucasian (80.7%), currently married (70.7%), had been pregnant at least once (88%), and had at least one child (82%). Many of the study participants reported an educational level of at least some college or more (67.1%), and an income level of \$50,000 and above (53.1%).

Table 4-2 displays the health characteristics of the sample. Self-reported health data revealed that most of the sample population was menopausal, with 66% (n=99) reporting no menstrual periods for one year or more. Over 75% of all the women in the study reported having menopausal symptoms and over 73% rated those symptoms as somewhat to extremely bothersome. Of the menopausal women in the sample (n=99), approximately 65% of those subjects became menopausal naturally. For the 35% with surgical menopause, the mean age at surgery was 38.7 years (minimum age 22, maximum age 50, SD  $\pm$ 7.3). The majority of women in the sample did not smoke with only 14.7% currently smoking; however 42.7% of women reported smoking at some time in the past. Medication use was common as 85% of the sample reported taking one or more prescription medications regularly. Few respondents however, reported taking hormone therapy. Of the menopausal women in the study (n=99), only 15.2% reported taking either estrogen alone or an estrogen-progestin medication (see Table 4-3). In the total sample (N=150), 16% of women reported taking estrogen or estrogen and progestin medications. Use of herbal supplements and vitamins were common with 47% of study participants (N=150) reporting use of at least one non-prescription

product. Soy products, black cohosh, vitamin E, fish oil, and multi-vitamins were the supplements most frequently taken.

### **Univariate Measures of Key Variables**

Appraisal of menopause was a key variable of interest. Appraisal of menopause was measured with the MAT, the MST, and the MSB scales. The mode of the appraisal of menopause measured by the MAT was menopause was a neutral event (n=72). Stress of menopause measured by the MST was found to have a mean of 3.04 (SD= ± 1.1) on a scale of 1-5 and a normal uni-modal distribution. Menopausal symptom bother (MSB) was found to have a mean of 2.42 (SD= ± 1.5) on a scale of 0-4 however the distribution of data was bimodal with a peak at subjects reporting no symptom bother and a peak at subjects reporting symptoms were moderately to extremely bothersome.

Coping strategies were a second major variable in the study. The 15 coping strategies were grouped into problem focused strategies and emotion focused strategies. The mean of problem focused coping was 55.2 (SD= ± 10.3, min.21- max 74) on a scale of 20-80. The mean of emotion focused coping was (SD= ± 91.9, min.52- max. 124) on a scale of 40-160. The distributions of scores for both problem and emotion focused coping were symmetrically bell-shaped.

Quality of life was the major outcome variable in the study. Mean total scores on the UQOL instrument were 68.1 (SD= ±9.4, min. 48, max. 87) on a scale of 48-100. The mean is approximately 0.5 standard deviations below the scale mean of 74. The distribution of scores was relatively normal.

### **Aim 1**

The first aim of this research study was to describe the characteristics of appraisal of menopause. Primary appraisal of menopause was measured with the Menopausal

Appraisal Tool (MAT). This single-item question asked participants to rate menopause as a negative harm or threat, a neutral event, or a positive challenge. A frequency table is displayed in Table 4-4. The mode indicated that most subjects appraised menopause as a neutral event with only 17.3% of subjects appraising menopause as a negative harmful/threatening event. The subjects' election of harm/threat, neutral, or challenge became the appraisal category for subsequent analyses.

Primary appraisal of menopause was also measured with the single-item Stress of Menopause Scale (MST) in which participants rated their perceived stress of menopause on a 5 point Likert-type scale ranging from 1 (not at all stressful) to 5 (extremely stressful), with frequency, valid percent and cumulative percent reported in Table 4-5. Participants perceived menopause as stressful, with 72% (N=150) rating the stress of menopause as somewhat to extremely stressful. The mode of stress of menopause was 'somewhat stressful' (n=63). Stress of menopause scores were found to be normally distributed (see Figure 4-3).

Symptom experience has been highly correlated with appraisal of menopause as a stressor in the literature (*Menopause Practice*, 2007). Participants were first asked if they experienced menopausal symptoms, then using the Menopausal Symptom Bother Scale (MSB) they were asked to rate symptom bother on a Likert-type scale from 0 (menopausal symptoms were not bothersome or troubling) to 4 (symptoms were extremely bothersome). Descriptive statistics were run on symptom experience (see Table 4-6), and symptom bother (see Table 4-7) with frequencies, valid percents, and cumulative percents reported. Participants overwhelmingly experienced menopausal symptoms (75%) and 62% rated symptom bother as moderately bothersome to

extremely bothersome. The mode for symptom bother was 'moderately bothersome' (n =52).

To further describe the characteristics of appraisal of menopause as a stressor, chi-square statistics were run for categorical variables found in the literature to be significantly related to appraisal of menopause as stressful (*Menopause Practice*, 2007). Chi-square non-parametric statistics were run to examine the relationship between the three appraisal groups of menopause (harm/threat, neutral, challenge) and categorical demographic data of race, educational level, marital status, income level, menopause status, symptom experience, BMI category, medication use, and current smoking status. Several categories were collapsed for race, marital status, education, and income when the initial chi-square analysis revealed greater than 20% of cells with an expected count less than 5 (Field, 2007). One way ANOVA was run for each of the three appraisal groups and scale level demographic data of age and menopausal symptom bother.

Race, educational level, marital status, income level, menopausal status, oophorectomy status, whether menopausal symptoms were present or absent, BMI category, use of prescription medication, and current smoking status all had no significant relationship with appraisal of menopause as a harm/threat, neutral or challenging event. Use of antidepressants, estrogen and estrogen/progestin agents specifically also had no correlation with appraisal of menopause. Use of over the counter herbal and vitamin supplements was however, statistically significantly related to appraisal of menopause. Women who viewed menopause as threatening were more likely to take bioidentical hormones, botanicals, and vitamins supplements whereas

women who viewed menopause as a challenge were less likely to take these products (see Tables 4-8 and 4-9).

Examination of appraisal of menopause by reported menopausal symptoms found no relationship between reported sleep disturbances, hot flashes, irritability, depression, vaginal dryness, or weight gain and assessment of menopause as a harm/threat, neutral or challenging event. Only anxiety and fatigue were statistically significantly and moderately correlated with appraisal of menopause as a stressor such that as anxiety and fatigue increased, appraisal of menopause as more stressful increased as shown in Tables 4-10 to 4-13.

One way ANOVA analyses were used to see if there were differences between the three groups of appraisal of menopause and scale level variables of age, and symptom bother. A relationship between age and appraisal of menopause almost approached statistical significance (see Table 4-14) with the trend indicating that as women aged, they tended to appraise menopause as more threatening. Symptom bother was significantly related to appraisal of menopause with results demonstrating that as symptom bother increased, appraisal of menopause as a threat increased, as displayed in Table 4-15. A one way ANOVA of perceived menopausal stress level by appraisal of menopause found that women who perceived menopausal stress levels as higher were more likely to appraise menopause as threatening (see Table 4-16).

In summary, the first aim of this study was to describe the characteristics of appraisal of menopause. This was accomplished using descriptive univariate statistics and ANOVA. Significant findings included the majority of women surveyed found menopause to be a neutral to challenging event despite experiencing symptoms of

menopause. Most demographic factors including race, education, and socioeconomic status had no effect on appraisal of menopause. Anxiety and fatigue were associated with increased scores for menopause stress. As scores for symptom bother and stress of menopause increased, women were more likely to appraise menopause as negative and threatening or harmful. Finally, women who viewed menopause as threatening were more likely to take botanical or herbal supplements.

## **Aim 2**

To determine what coping strategies were significantly related to quality of life, a Pearson's product-moment correlation using the 15 coping strategies and total quality of life score was run. Three problem focused coping dimensions and two emotion focused coping strategies were significantly related to quality of life. The problem focused coping strategies that were statistically significant with a small to moderate effect size were: active coping ( $r = .286$ ,  $p < .001$ ), suppression of competing activities ( $r = .281$ ,  $p = .001$ ), and planning ( $r = .291$ ,  $p < .001$ ). The emotion focused coping strategies statistically significantly related to quality of life with a small effect size were use of emotional social support ( $r = .184$ ,  $p = .025$ ) and positive reinterpretation ( $r = .164$ ,  $p = .046$ ) (see Table 4-17).

To test the hypotheses and determine whether quality of life in women in perimenopause and menopause was related to use of emotion focused or problem focused coping strategies, multiple regression was used. The study hypotheses were that high quality of life scores would be associated with use of problem focused coping strategies and low quality of life scores would be associated with use of emotion focused coping strategies.

A variable for problem focused coping was created from summing the COPE subscale scores identified with problem focused coping: use of instrumental social support, active coping, restraint, suppression of competing activities and planning (Carver et al., 1989). A variable for emotion focused coping was created in the same manner using the COPE subscales of: positive reinterpretation and growth, mental disengagement, focus on and venting of emotions, denial, religious coping, humor, behavioral disengagement, use of emotional social support, substance use, and acceptance (Carver et al., 1989). These independent scale variables were then used in the analyses.

Assumptions for regression were analyzed, and independence of values was assumed. The assumption of normality (examined with a null plot) was confirmed violated for problem focused coping (COPE problem) with a Shapiro-Wilk Test ( $p < .05$ ) (see Table 4-18) however, regression is robust to violations of normality (Field, 2005) and analysis was continued. The Durbin-Watson statistic =1.65 and indicated independence of the error term. All data including outliers and influential cases were included in the analysis as representative of the population. Scatterplots, the null plot, and partial regression plots of each IV against the DV were examined for linearity and ruled out curvilinear relationships. Potential for multicollinearity of the independent variables was prescreened using a correlation matrix. There was a moderate positive correlation between problem focused coping and emotion focused coping (see Table 4-19) however variance inflation factor (VIF) scores  $< 10$  revealed the assumption of multicollinearity was not violated.

The COPE problem and COPE emotion coping variables were entered as the IVs in one step in the regression model and total QOL score was entered as the DV. The regression model was statistically significant ( $F= 6.91, p=.001$ ). The adjusted R square ( $R= .077$ ) showed the model accounted for 7.7% of the variance in quality of life with problem focused coping accounting for the largest effect (standardized Beta= .332,  $p<.001$ ). The first hypothesis was supported: women who had higher scores on use of problem focused coping methods had higher scores on quality of life. Scores for use of emotion focused coping, while not reaching statistical significance ( $p >.05$ ), had a negative standardized Beta (-.097) demonstrating that as emotion focused coping scores increased, scores on the quality of life scale decreased as hypothesized.

The second aim was to determine what coping strategies were significantly related to quality of life. This aim was met by determining that the problem focused coping strategies of active coping, suppression of competing activities, and planning and the emotion focused coping strategies of use of emotional social support and positive reinterpretation were significantly related to quality of life. The hypothesis that use of predominately problem focused coping strategies would be associated with high quality of life in perimenopausal and menopausal women was supported by the data. The hypothesis that use of predominately emotion focused coping strategies would be associated with low quality of life was not supported by the data. The data did however show a trend that use of emotion focused coping strategies was associated with lower scores on quality of life.

### **Aim 3**

The third aim was to determine whether coping strategies mediated the relationship between primary appraisal of menopause as a stressor and quality of life as

depicted in Lazarus and Folkman's model. A separate set of regression models were run for each of the three appraisal groups: negative harm/threat, neutral, and positive challenge. The five coping strategies that significantly correlated to quality of life in Aim 2 analyses were used as the group of mediating variables: problem focused suppression of competing activities, active coping, and planning and emotion focused use of social support and positive reinterpretation. Testing of assumptions was accomplished and the Baron and Kenney method (1986) of testing for a mediating relationship was followed.

### **Harm/Threat Group**

Do coping strategies mediate the relationship between primary appraisal of menopause as a stressor and quality of life in women who appraised menopause as a negative harm/threat? The dependent variable quality of life was measured as the total QOL score on the UQOL Scale. The independent variable stress of menopause was measured by the MST.

Univariate statistics were run on the IV and DV. For the IV appraisal of stress of menopause, the mean was 4.15 on a scale of 1 (not at all stressful) to 5 (extremely stressful). The standard deviation =0.78, range =2, min.=3, max.=5. A histogram revealed the data were skewed to the right toward higher stress appraisals. The DV quality of life had a mean of 68.58, below the mean of 74 for the scale. The standard deviation =8.75, range =32, min.= 54, max.= 86. A histogram revealed the data were fairly normally distributed.

A bivariate correlation matrix of the IV to DV revealed no significant correlation between appraisal of stress of menopause and quality of life ( $r=0.16$ ,  $p=.45$ ). Although there was no correlation between appraisal of stress of menopause and quality of life, in

order to demonstrate knowledge of using these techniques, the analyses were continued.

Simple regression was run for the harm/threat group (N=26) from appraisal of stress to QOL as the first step in the path analysis. The data were checked for duplicate demographic data and none was found therefore the assumption of independent samples was not violated. The assumption of normality was examined with a null plot and confirmed with a Shapiro-Wilk Test (see Table 4-18). For appraisal of menopause as somewhat stressful, the assumption of normality was violated, however, regression is robust to violations of normality (Field, 2005) and analysis was continued. The null plot and Durbin-Watson statistic (1.48) indicated independence of the error term. No outliers were identified after examining ZRE scores (all scores were <2) and one influential case identified using the dfBeta (>1) was included in the analysis as an exceptional but valid observation. A scatterplot of the IV against the DV was examined and ruled out curvilinear relationships. The null plot and partial plots confirmed the assumption of linearity was not violated for the sample. Potential for multicollinearity was prescreened using a correlation matrix. There was no significant correlation between the IV and DV and VIF scores <10 revealed the assumption of multicollinearity was not violated. Homoscedasticity was confirmed with the null plot.

The first step in the Baron & Kenny method of path analysis, regression analysis of appraisal of stress (X) on QOL (Y) was found not to be significant (F= 0.59, p=.45) and the path analysis was not continued.

### **Neutral Group**

Do coping strategies mediate the relationship between primary appraisal of menopause as a stressor and quality of life in women who appraised menopause as a

neutral event? The dependent variable quality of life was measured as the total QOL score on the UQOL Scale. The independent variable stress of menopause was measured by the MST.

Univariate statistics were run on the IV and DV. For the IV appraisal of stress of menopause, the mean was 2.4 on a scale of 1 (not at all stressful) to 5 (extremely stressful). The standard deviation =0.96, range =4, min.=1, max.= 5. A histogram revealed the data were normally distributed. The DV quality of life had a mean of 67.4, below the mean of 74 for the scale. The standard deviation =9.80, range =32, min.= 41, max.= 87. A histogram revealed the data had a unimodal normally distributed pattern.

A bivariate correlation matrix of the IV to DV revealed no significant correlation between appraisal of stress of menopause and quality of life ( $r = -.18$ ,  $p = .13$ ).

Scatterplots were screened to rule out curvilinearity.

Simple regression was run for the neutral group ( $N=72$ ) from appraisal of stress to QOL as the first step in the path analysis. The data were checked for duplicate demographic data and none was found therefore the assumption of independent samples was not violated. The assumption of normality was examined with a null plot and confirmed with a Shapiro-Wilk Test (see Table 4-19). The null plot and Durbin-Watson statistic (1.89) indicated independence of the error term. No outliers were identified after examining ZRE scores (all scores were  $<2$ ) and no influential cases were identified using the  $dfBeta$  ( $>1$ ). A scatterplot of the IV against the DV was examined and ruled out curvilinear relationships. The null plot and partial plots confirmed the assumption of linearity was not violated for the sample. Potential for multicollinearity was prescreened using a correlation matrix. There was no significant correlation

between the IV and DV and VIF scores  $<10$  revealed the assumption of multicollinearity was not violated. Homoscedasticity was confirmed with the null plot.

The first step in the Baron & Kenny method of path analysis, regression analysis of appraisal of stress (X) on QOL (Y) was found not to be significant ( $F=2.37$ ,  $p=.13$ ) and the path analysis was not continued.

### **Challenge Group**

Do coping strategies mediate the relationship between primary appraisal of menopause as a stressor and quality of life in women who appraised menopause as a challenge? The dependent variable quality of life was measured as the total QOL score on the UQOL Scale. The independent variable stress of menopause was measured by the MST.

Univariate statistics were run on the IV and DV. For the IV appraisal of stress of menopause, the mean was 3.37 on a scale of 1 (not at all stressful) to 5 (extremely stressful). The standard deviation = .79, range =3, min.=2, max.= 5. A histogram revealed the data were normally distributed. The DV quality of life had a mean of 68.77, below the mean of 74 for the scale. The standard deviation =9.15, range =38, min.= 49, max.= 87. A histogram revealed the data were fairly normally distributed.

A bivariate correlation matrix of the IV to DV revealed no significant correlation between appraisal of stress of menopause and quality of life ( $r = .006$ ,  $p=.96$ ).

Scatterplots were screened for linearity.

Simple regression was run for the challenge group ( $N=52$ ) from appraisal of stress to QOL as the first step in the path analysis. The data were checked for duplicate demographic data and none was found therefore the assumption of independent samples was not violated. The assumption of normality was examined with a null plot

and confirmed with a Shapiro-Wilk Test (see Table 4-20). For appraisal of menopause as somewhat stressful, the assumption of normality was violated, however, regression is robust to violations of normality (Field, 2005) and analysis was continued. The null plot and Durbin-Watson statistic (1.77) indicated independence of the error term. No outliers were identified after examining ZRE scores (all scores were  $<2$ ) and no influential cases were identified using the  $df\beta$  ( $>1$ ). A scatterplot of the IV against the DV was examined and ruled out curvilinear relationships. The null plot and partial plots confirmed the assumption of linearity was not violated for the sample. Potential for multicollinearity was prescreened using a correlation matrix. There was no significant correlation between the IV and DV and VIF scores  $<10$  revealed the assumption of multicollinearity was not violated. Homoscedasticity was confirmed with the null plot.

The first step in the Baron & Kenny method of path analysis, regression analysis of appraisal of stress (X) on QOL (Y) was found not to be significant ( $F = .002$ ,  $p = .96$ ) and the path analysis for a mediating role for coping strategies was ended.

### **Summary**

This chapter presented the results of the statistical analyses used to answer the three research aims and hypotheses. The characteristics of appraisal of menopause as a stressor were described. The problem focused coping strategies of active coping, suppression of competing activities and planning and the emotion focused coping strategies of use of emotional support and positive reinterpretation were found to be statistically significantly related to quality of life in perimenopausal and menopausal women. Finally, the role of coping strategies as a mediator between appraisal and QOL was examined. Regression analysis was run separately for each appraisal group. For women appraising menopause as a negative harm/threat, neutral, or challenge:

appraisal was not significantly related to QOL and analysis for a mediating relationship was not continued.

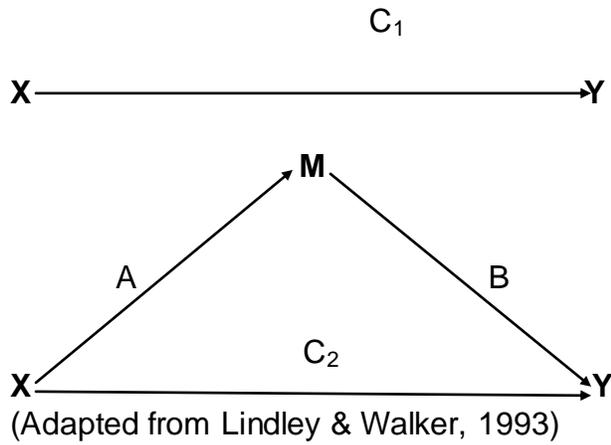
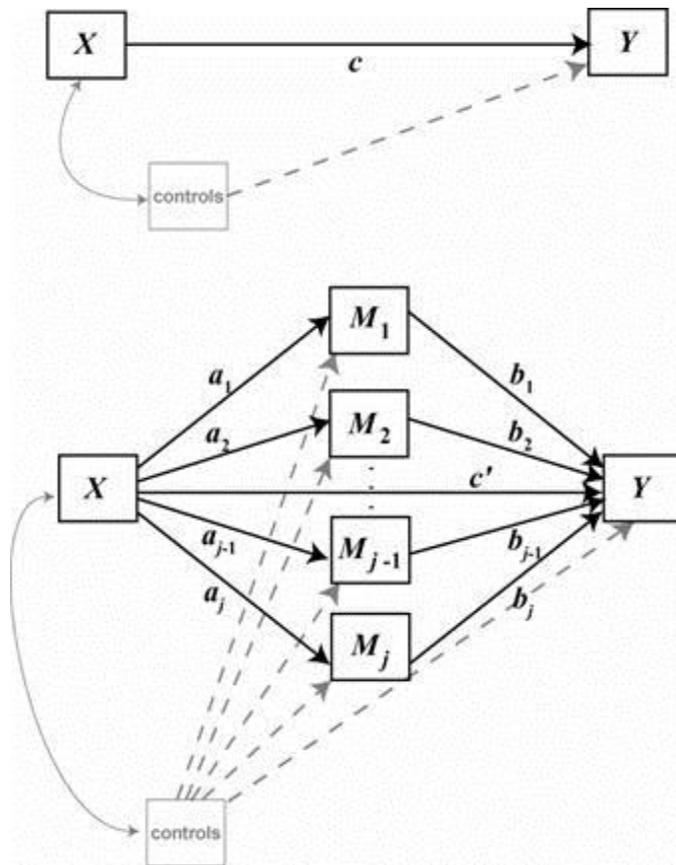


Figure 4-1. Baron & Kenny mediational model



(Adapted from Preacher & Hayes, 2008)

Figure 4-2. Bootstrap multiple mediator model

Table 4-1. Description of sample

Variable	N	Frequency	Valid %	Mean (SD)	Min. - Max.
<b>Age (years)</b>	150			52.5 (4.8)	45 - 60
<b>BMI</b>	145			28.45 (7.01)	17 - 48
<b>Race</b>	150				
White non-Hispanic		121	80.7		
African American		19	12.7		
Hispanic		5	3.3		
Asian		5	3.3		
<b>Marital Status</b>	150				
Never married		7	4.7		
Married		106	70.7		
Widowed		9	6.0		
Divorced		26	17.3		
Separated		2	1.3		
<b>Gravida (G)</b>	150		G≥1=88	2.4 (1.6)	0 - 7
<b>Para (P)</b>	150		P≥1=82	1.9 (1.2)	0 - 5
<b>Educational level</b>	149				
K-12		10	6.7		
High school/GED		39	26.2		
Some college		47	31.5		
College graduate		35	23.5		
Graduate school		18	12.1		
<b>Income category</b>	147				
(dollars)					
not currently employed		11	7.5		
0-14,999		5	3.4		
15,000-24,999		8	5.4		
25,000-49,999		45	30.6		
50,000 and above		78	53.1		

Table 4-2. Health data of sample

Variable	N	Frequency	Valid %
<b>Menopausal?</b>	150		
yes		99	66
no		51	34
<b>Experience menopausal symptoms?</b>	149		
yes		112	75.2
no		37	24.8
<b>Menopausal symptom bother</b>	150		
no bother		31	20.7
a little bother		9	6.0
somewhat bothersome		17	11.3
moderately bothersome		52	34.7
extremely bothersome		41	27.3
<b>Menopause type</b>	99		
natural menopause		64	64.7
oophorectomy		35	35.3
<b>Smoking status</b>	150		
not a current smoker		128	85.3
current smoker		22	14.7
past smoker		64	42.7

Table 4-3. Frequency table of hormone therapy use in menopausal subjects

	Estrogen		Estrogen and progestin	
	Frequency	Valid Percent	Frequency	Valid Percent
no	90	90.9	93	93.9
yes	9	9.1	6	6.1
Total	99	100.0	99	100.0

Table 4-4. Frequency table of menopause appraisal (MAT)

	Frequency	Valid Percent	Cumulative Percent
threat	26	17.3	17.3
neutral	72	48.0	65.3
challenge	52	34.7	100.0
Total	150	100.0	

Table 4-5. Frequency table of stress of menopause (MST)

	Frequency	Valid Percent	Cumulative Percent
not at all stressful	14	9.3	9.3
a little stressful	28	18.7	28.0
somewhat stressful	63	42.0	70.0
very stressful	28	18.7	88.7
extremely stressful	17	11.3	100.0
Total	150	100.0	

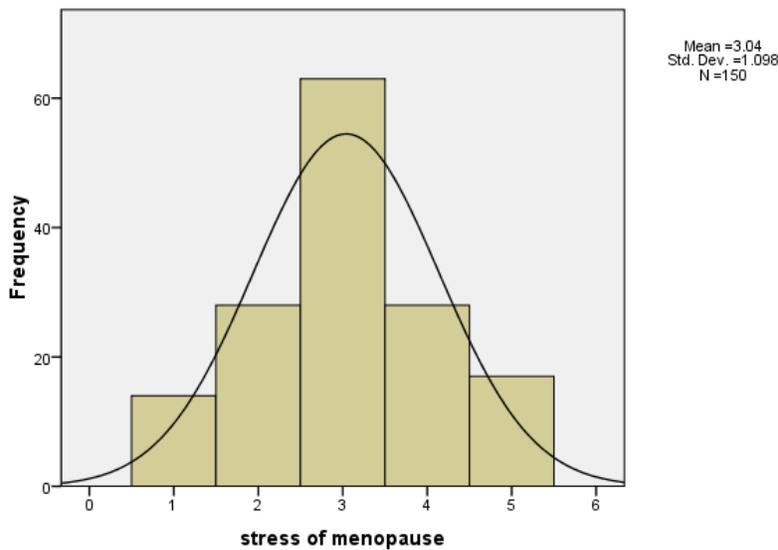


Figure 4-3. Histogram of stress of menopause (MST)

Table 4-6. Frequency table of menopausal symptom experience

	Frequency	Valid Percent	Cumulative Percent
no symptoms	37	24.8	24.8
yes symptoms	112	75.2	100.0
Total	149	100.0	
Missing	1		
Total N	150		

Table 4-7. Frequency table of menopausal symptom bother (MSB)

	Frequency	Valid Percent	Cumulative Percent
no bother	31	20.7	20.7
a little bother	9	6.0	26.7
somewhat bothersome	17	11.3	38.0
moderately bothersome	52	34.7	72.7
extremely bothersome	41	27.3	100.0
Total N	150	100.0	

Table 4-8. Frequency table for use of bio-identicals, botanicals and vitamins and appraisal of menopause

		appraisal of menopause			Total
		threat	neutral	challenge	
use of bio-identicals, botanicals and vitamins	no	11	32	36	79
	yes	15	40	16	71
Total N		26	72	52	150

Table 4-9. Pearson's correlation for use of bio-identicals, botanicals and vitamins and appraisal of menopause

Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.795a	2	.012
Phi	.242		.012
Cramer's V	.242		.012
N of Valid Cases	150		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.31

Table 4-10. Frequency table appraisal of menopause and anxiety

		appraisal of menopause			Total
		0 threat	1 neutral	2 challenge	
anxiety	0 no	7	38	31	76
	1 yes	19	34	21	74
Total		26	72	52	150

Table 4-11. Pearson's correlation for appraisal of menopause and anxiety

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.658a	2	.022
Phi	.226		.022
Cramer's V	.226		.022
N of Valid Cases	150		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.83

Table 4-12. Frequency table appraisal of menopause and fatigue

		appraisal of menopause			Total
		0 threat	1 neutral	2 challenge	
fatigue	no	5	43	33	81
	yes	21	29	19	69
Total		26	72	52	150

Table 4-13. Pearson's correlation for appraisal of menopause and fatigue

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.477a	2	.000
Phi	.321		.000
Cramer's V	.321		.000
N of Valid Cases	150		

Table 4-14. ANOVA appraisal of menopause and age

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.877	15	.792	1.722	.054
Within Groups	61.616	134	.460		
Total	73.493	149			

Table 4-15. ANOVA appraisal of menopause and symptom bother

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.343	4	1.586	3.424	.010
Within Groups	67.150	145	.463		
Total	73.493	149			

Table 4-16. ANOVA appraisal of menopause and stress of menopause

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	66.998	2	33.499	43.671	.000
Within Groups	112.762	147	.767		
Total	179.760	149			

Table 4-17. Correlation matrix of coping strategies and quality of life

		UQOL total
COPE focus on and venting of emotions	Pearson Correlation	-.077
	Sig. (2-tailed)	.350
	N	149
COPE use of instrumental social support	Pearson Correlation	.119
	Sig. (2-tailed)	.150
	N	149
COPE active coping	Pearson Correlation	.286**
	Sig. (2-tailed)	.000
	N	149
COPE denial	Pearson Correlation	.156
	Sig. (2-tailed)	.057
	N	149
COPE religious coping	Pearson Correlation	.039
	Sig. (2-tailed)	.633
	N	149
COPE humor	Pearson Correlation	-.023
	Sig. (2-tailed)	.778
	N	149
COPE behavioral disengagement	Pearson Correlation	-.144
	Sig. (2-tailed)	.079
	N	149

Table 4-17. continued

		UQOL total
COPE restraint	Pearson Correlation	.132
	Sig. (2-tailed)	.109
	N	149
COPE use of emotional social support	Pearson Correlation	.184*
	Sig. (2-tailed)	.025
	N	149
COPE substance use	Pearson Correlation	-.075
	Sig. (2-tailed)	.364
	N	149
COPE acceptance	Pearson Correlation	.114
	Sig. (2-tailed)	.168
	N	149
COPE suppression of competing activities	Pearson Correlation	.281**
	Sig. (2-tailed)	.001
	N	149
COPE planning	Pearson Correlation	.291**
	Sig. (2-tailed)	.000
	N	149
COPE positive reinterpretation	Pearson Correlation	.164*
	Sig. (2-tailed)	.046
	N	149
COPE mental disengagement	Pearson Correlation	-.111
	Sig. (2-tailed)	.178
	N	149

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 4-18. Shapiro-Wilk test of normality harm/threat group

		Shapiro-Wilk		
stress of menopause		Statistic	df	Sig.
UQOL total	3 somewhat stressful	.705	6	.007
	4 very stressful	.861	10	.078
	5 extremely stressful	.912	10	.296
a. Lilliefors Significance Correction				

Table 4-19. Shapiro-Wilk test of normality neutral group

		Shapiro-Wilk		
	stress of menopause	Statistic	df	Sig.
UQOL total	1 not at all stressful	.929	14	.291
	2 a little stressful	.944	23	.220
	3 somewhat stressful	.952	26	.264
	4 very stressful	.810	7	.052

a. Lilliefors Significance Correction

Table 4-20. Shapiro-Wilk test of normality of challenge group

		Shapiro-Wilk		
	stress of menopause	Statistic	df	Sig.
UQOLtotal	2 a little stressful	.975	4	.874
	3 somewhat stressful	.878	31	.002
	4 very stressful	.927	11	.377
	5 extremely stressful	.883	6	.283

a. Lilliefors Significance Correction

## CHAPTER 5 DISCUSSION

Menopause is a life stage with physical and psychosocial changes that can have a profound effect on women's lives. This study investigated women's appraisal of menopause as a stressor and examined the relationship between coping strategies and quality of life. Finally, this study sought to test the role of coping strategies as mediators between the event, appraisal of menopause and the outcome, quality of life as proposed in the Lazarus and Folkman model of stress and coping (1984).

### **Discussion of Findings**

There is very little in the published research regarding how women appraise menopause. In contrast to the frequent medical assumption that menopause is viewed as a negatively stressful event (Woods & Mitchell, 2010), this study found that women aged 45-60 overwhelmingly viewed menopause as either a neutral or positive event (82.7%) regardless of age, race, menopausal status or symptom experience. This finding is surprising considering the majority of subjects (72%) rated menopause as somewhat to extremely stressful, 75% of women participating in this study reported experiencing menopausal symptoms, and 62% rated their menopausal symptoms as moderately to extremely bothersome. The data from this study indicates that while menopause may be rated as stressful and the symptoms perceived as bothersome, it can still be viewed as a positive or at least neutral life event on the whole.

Use of HT by women in the sample (15.2%) was almost double the published national rates for HT use of 8%-9% (Newton et al., 2010). This may be due to sample bias as data were collected in a single physician Ob-Gyn office and may reflect that particular physician's prescribing practices. Also, Ob-Gyn physicians prescribe HT at

higher rates than do physicians in other specialties, which may be another contributing factor (Newton et al., 2010). A third factor may be the high body mass index of the sample: over 64% of the sample had a BMI in the overweight or higher categories. Research has shown that BMI may be the single most important predictor of vasomotor symptoms (*Menopause Practice*, 2007) and HT remains the gold standard treatment (ACOG, 2004; Lewis, 2009; *Menopause Practice*, 2007).

An interesting finding in this study was that women who appraised menopause as a negative threatening event were more likely to use botanical and herbal supplements but no more likely to use HT than women who appraised menopause as neutral to challenging. This finding may represent the fact that use of herbal and botanical medications is increasingly popular and the perceived safety of these products may contribute to use in this population (Keenan et al., 2003). The use of herbal supplements in this study (47%) mirrored national usage rates reported by Keenan and colleagues to be 46%.

Menopausal symptoms had little effect on appraisal of menopause as a stressor in this study. Anxiety and fatigue were the only symptoms moderately correlated with increased appraisal of menopause as a negative event. Self reported sleep disturbances, hot flashes, vaginal dryness, irritability and depression all were found to be nonsignificant factors. Several factors may have contributed to these nonsignificant findings. Sleep disturbances, hot flashes, vaginal dryness and depression all are commonly recognized medical conditions for which patients frequently seek treatment (*Menopause Practice*, 2007). Fully 85% of the sample reported taking prescription

medications including sleeping pills, HT and anti-depressants, which may contribute to the fact that these symptoms did not figure in appraisal of menopause.

Symptom bother however, was found to be related to appraisal of menopause such that subjects with increased levels of symptom bother were more likely to appraise menopause as a threat or harm. Further, women who rated the stress of menopause as increased were more likely to find menopause to be threatening or harmful. These findings are congruent with the concepts from Lazarus and Folkman that illness can be a stressor endangering well-being and stress can cause distress (1984).

Supporting Lazarus and Folkman's premise that coping strategies are neither inherently adaptive nor maladaptive (1984), this study found that a combination of problem focused and emotion focused coping strategies were associated with higher quality of life. Problem focused coping strategies of active coping, suppression of competing activities and planning were moderately correlated with quality of life. Taking steps to remove the stress or mitigate its effects (active coping), coming up with strategies to deal with the stress (planning), and avoiding distraction to deal with the stress (suppression of competing activities) were found by Carver et al., 1989 to be theoretically adaptive. Emotion focused coping strategies were found to have a lesser effect size on quality of life in this study. Seeking out social support for emotional reasons and positive reappraisal were similarly reported by Carver and colleagues to have an adaptive effect as well.

The hypothesis that women who predominately used problem focused coping strategies would have high quality of life was supported by the study data. The hypothesis that women who predominately used emotion focused coping strategies

would have low quality of life was not supported by the data. The data did however show a trend that use of emotion focused coping strategies was associated with lower scores on the quality of life scale.

This study did not support Lazarus and Folkman's model that coping strategies mediate between appraisal of the stressor and the outcome. Investigation for a mediating effect was ended when analysis of the data for each of the three appraisal groups revealed no significant relationship between the IV appraisal of stress of menopause and the outcome variable quality of life.

### **Limitations**

Several factors contributed to sample bias in this study. Data were collected from a single physician office. Subjects chose whether to participate or not, introducing the bias of self-selection (Portney & Watkins, 2000), and were present in a physician's office either seeking care themselves or accompanying someone seeking care, which may distort the results. A convenience sample, while often used in healthcare research, may not be representative the true population limiting generalizeability of the findings (Hulley et al. 2001). Descriptive statistics and census data included in the Appendix (Appendix C) show that the study sample was more racially diverse than the population of Nassau County, but had an underrepresentation of Hispanics when compared to the entire state of Florida.

A second limiting factor is the lack of standardization in the literature regarding the meaning of terms. There is little consistency in the nomenclature describing menopause and its symptoms. Even the term menopause is used differently in the medical and research literature (National Cancer Institute, 2005; Perimenopause, 2008). Despite its importance in providing optimal health care, QOL does not have a precise definition in

medical literature (Utian et al., 2002). Research to standardize the language used to describe menopause is needed as well as to describe menopausal symptoms and quality of life.

Another difficulty exists in terms of measuring concepts with current tools and instruments (Kessler, 1996). In reviewing over 10,000 unique research studies on menopause, the Agency for Healthcare Research and Quality found major limitations in this body of research involving dissimilar methods for defining, evaluating, assessing, and reporting menopausal changes (Nelson, 2005). This study used tools developed by the PI to measure appraisal of menopause as no tools were found to be congruent with the underlying theory and the study's aims. These tools have no validity and reliability data however, and further testing is needed.

### **Implications for Future Research**

Future directions for research on stress, coping, and menopause include scientific investigation of factors affecting quality of life. Since modern women live as many as one-third of their years in the menopausal state (*Menopause Practice*, 2007; Poindexter & Wysocki, 2004), quality of life as an outcome measure is important as it ultimately may help women live more meaningful and enjoyable lives (Utian, 2005). Future research is needed to clarify the effects of coping strategies as well as other factors on quality of life in perimenopausal and menopausal women.

One of the factors particularly pertinent to quality of life may be depression during midlife. Depression is emerging in the literature as causing significant disability in this population and has strong associations with the diseases of osteoporosis and cardiovascular disease prevalent in menopausal women (Soares & Maki, 2010).

A second factor affecting quality of life deserving of research attention is the multiple roles women have during this period of life including spouse, mother, caretaker, and member of the work force. Role strain can be positive or negative and may affect women's health and quality of life (Lengacher, 1997).

The considerations are complex when providing effective care during this life stage. Women and their health care providers must individually evaluate appraisal of menopause and assess coping skills with the goal of preserving and improving quality of life (Butt, et al., 2007; *Menopause Practice*, 2007). A study of women in perimenopause and menopause that includes an examination of factors that influence quality of life is critical in order for healthcare providers to understand and implement effective strategies that facilitate and promote health and quality of life as women experience this life change.

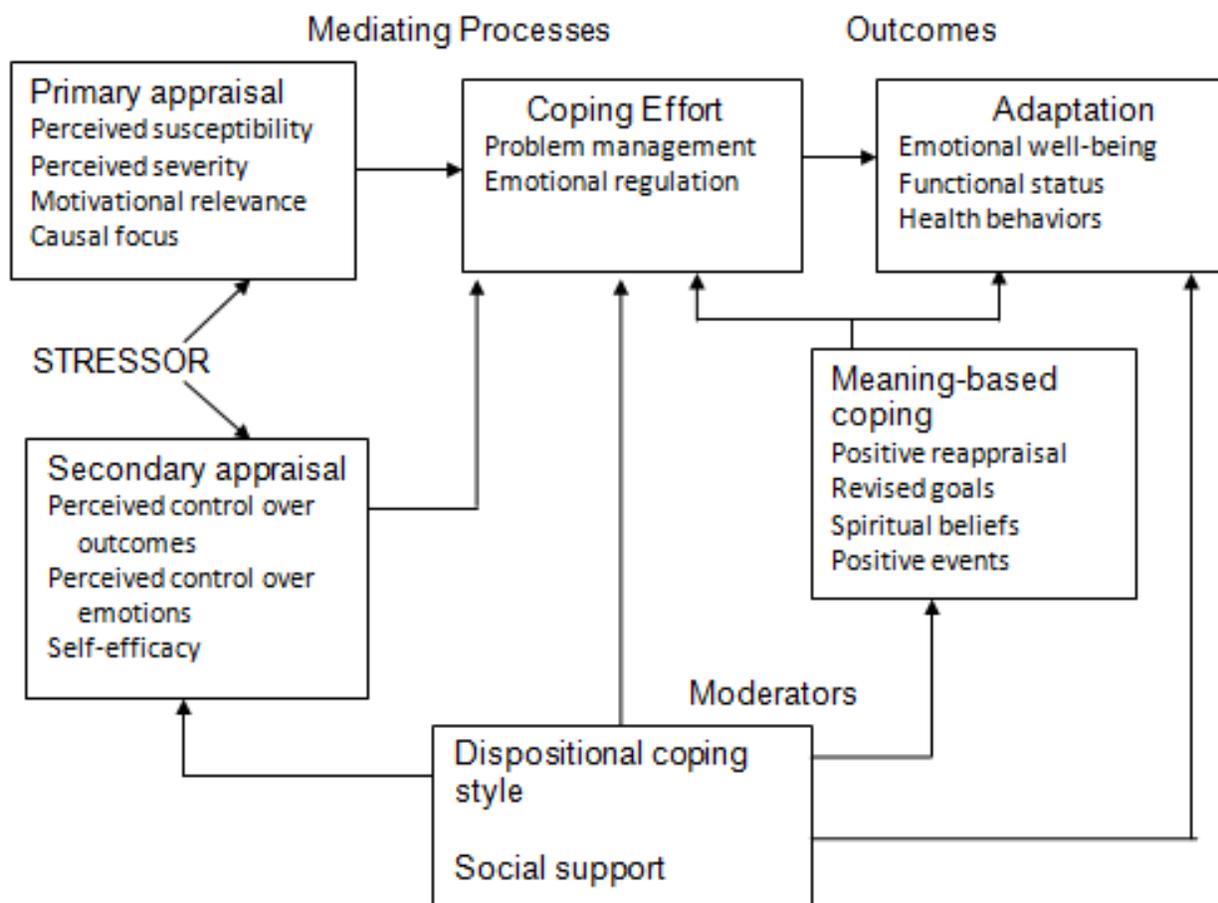
### **Conclusions**

Menopause affects every woman who lives long enough to experience ovarian failure and the concordant changes in gonadal hormone levels. The large population of menopausal women, the important quality of life issues, and serious health implications related to menopause combined with the significant public health issues, associated treatment costs, and health care utilization make the importance of research on menopause and quality of life apparent. The direct effects of menopause on women's quality of life remain unclear. In a 2006 study, Mishra and Kuh reported that in terms of physical, psychosomatic, and personal quality of life domains, women's experience of menopause was complex, involved a host of other factors and influence, and was by no means overwhelmingly negative.

This study has several implications for women's health care practitioners. The dialogue about menopause needs to be reframed from one based on a negative perspective to acceptance of menopause as a natural life stage. As fatigue and anxiety were found to significantly impact appraisal of menopause as harmful or threatening in this study, practitioners may consider assessing the presence and severity of these symptoms and discuss non-hormonal treatment options. Encouraging women to actively cope with menopause, positively reappraise the experience, and seek emotional support may positively impact quality of life. Practitioners should consider each woman's preferences, health history, personal risk factors, and symptom experience when counseling patients and considering therapeutic options to improve quality of life.

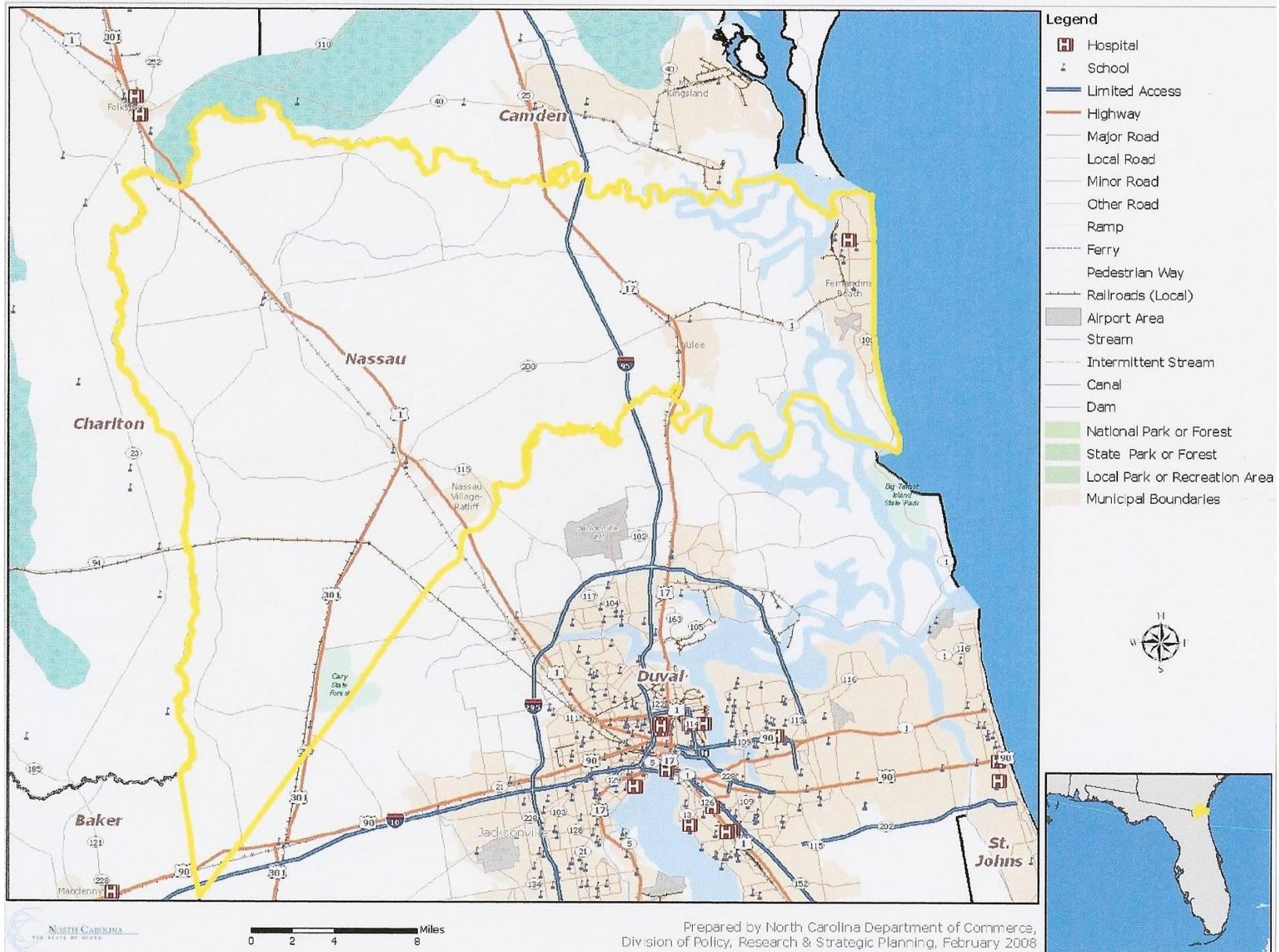
A systematic study of appraisal of menopause, coping strategies, and quality of life in perimenopausal and menopausal women based on the transactional model of stress and coping will add to the body of knowledge and further the development of effective counseling, health promotion and clinical management to improve the life and health of this large population segment. Menopause and its consequences are a topic deserving of and long overdue for sound research to improve clinical practice and ultimately the health and quality of life of millions of women worldwide. This study provides a first look into primary appraisal of menopause, and the relationship between appraisal, coping strategies, and quality of life in perimenopausal and menopausal women. While the results of this study are a significant first step, replication is warranted to validate the study's findings.

APPENDIX A  
 LAZURUS AND FOLKMAN TRANSACTIONAL MODEL OF STRESS AND COPING  
 2002



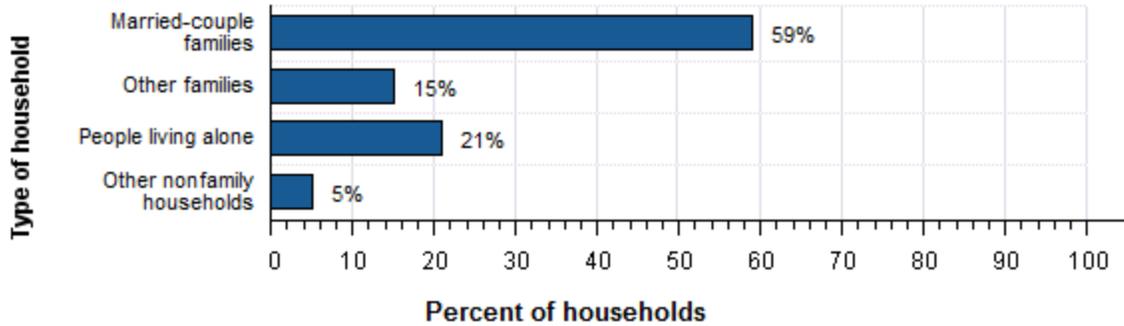
(Wenzl, Glanz, & Lerman, 2002, p.215).

APPENDIX B  
NASSAU COUNTY MAP



**APPENDIX C  
NASSAU COUNTY CENSUS DATA**

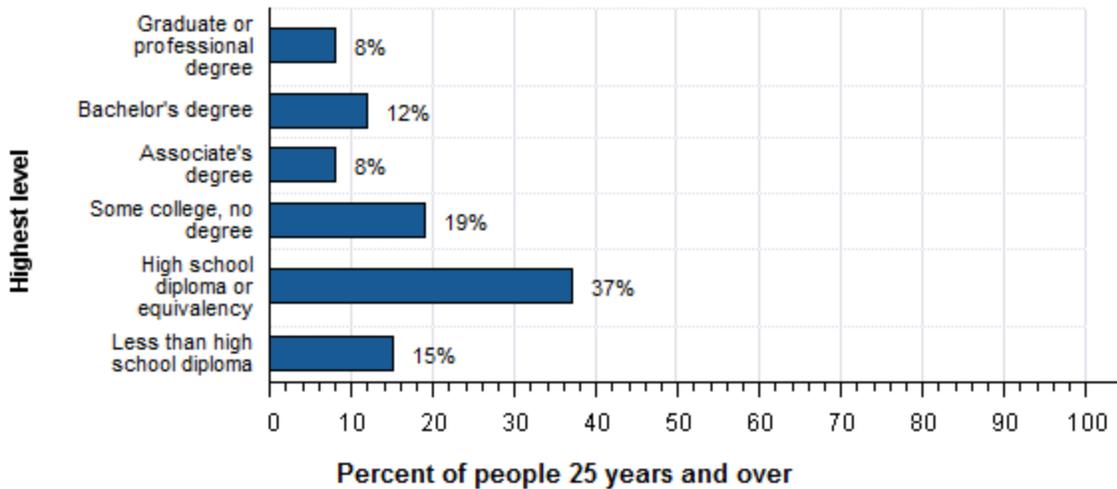
**The Types of Households in Nassau County, Florida in 2006-2008**



Source: American Community Survey, 2006-2008

**HOUSEHOLDS AND FAMILIES:** In 2006-2008 there were 25,000 households in Nassau County. The average household size was 2.7 people.

**The Educational Attainment of People in Nassau County, Florida in 2006-2008**

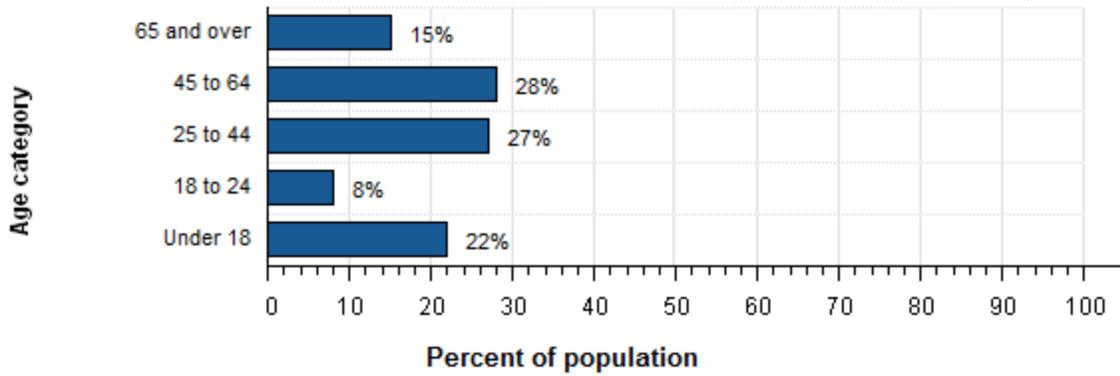


**EDUCATION:** In 2006-2008, 85 percent of people 25 years and over had at least graduated from high school and 20 percent had a bachelor's degree or higher. Fifteen percent were dropouts; they were not enrolled in school and had not graduated from high school.

**INCOME:** The median income of households in Nassau County was \$59,072. Seventy-eight percent of the households received earnings and 24 percent received retirement income other than Social Security. Thirty-three percent of the households received Social Security. The average income from Social Security was \$16,254. These income sources are not mutually exclusive; that is, some households received income from more than one source.

POPULATION OF Nassau County: In 2006-2008, Nassau County had a total population of 68,000 - 34,000 (50 percent) females and 34,000 (50 percent) males. The median age was 41.2 years. Twenty-two percent of the population was under 18 years and 15 percent was 65 years and older.

**The Age Distribution of People in Nassau County, Florida in 2006-2008**



Source: American Community Survey, 2006-2008

For people reporting one race alone, 88 percent was White; 8 percent was Black or African American; less than 0.5 percent was American Indian and Alaska Native; 1 percent was Asian; less than 0.5 percent was Native Hawaiian and Other Pacific Islander, and 1 percent was Some other race. One percent reported Two or more races. Three percent of the people in Nassau County was Hispanic. Eighty-seven percent of the people in Nassau County was White non-Hispanic. People of Hispanic origin may be of any race.

(U.S. Census Bureau, 2006-2008)

## Nassau County, Florida

 Further information

Want more? [Browse data sets for Nassau County](#)

People QuickFacts	Nassau County	Florida
 Population, 2009 estimate	70,576	18,537,969
 Population, percent change, April 1, 2000 to July 1, 2009	22.4%	16.0%
 Population estimates base (April 1) 2000	57,663	15,982,839
 Persons under 5 years old, percent, 2008	6.1%	6.2%
 Persons under 18 years old, percent, 2008	21.9%	21.8%
 Persons 65 years old and over, percent, 2008	15.4%	17.4%
 Female persons, percent, 2008	50.5%	50.9%
<hr/>		
 White persons, percent, 2008 (a)	89.3%	79.8%
 Black persons, percent, 2008 (a)	8.3%	15.9%
 American Indian and Alaska Native persons, percent, 2008 (a)	0.4%	0.5%
 Asian persons, percent, 2008 (a)	0.8%	2.3%
 Native Hawaiian and Other Pacific Islander, percent, 2008 (a)	 Z	0.1%
 Persons reporting two or more races, percent, 2008	1.1%	1.4%
 Persons of Hispanic or Latino origin, percent, 2008 (b)	2.8%	21.0%
 White persons not Hispanic, percent, 2008	86.7%	60.3%
<hr/>		
 High school graduates, percent of persons age 25+, 2000	81.0%	79.9%
 Bachelor's degree or higher, pct of persons age 25+, 2000	18.9%	22.3%
 Persons with a disability, age 5+, 2000	10,462	3,274,566
 Mean travel time to work (minutes), workers age 16+, 2000	28.2	26.2
<hr/>		
 Housing units, 2008	33,613	8,800,294
 Homeownership rate, 2000	80.6%	70.1%
 Housing units in multi-unit structures, percent, 2000	 16.4%	29.9%
 Median value of owner-occupied housing units, 2000	\$126,700	\$105,500
<hr/>		
 Households, 2000	21,980	6,337,929
 Persons per household, 2000	2.59	2.46
 Median household income, 2008	\$59,514	\$47,802
 Per capita money income, 1999	\$22,836	\$21,557
 Persons below poverty level, percent, 2008	8.9%	13.3%

(U.S. Census Bureau, 2009)

APPENDIX D  
DEMOGRAPHIC INFORMATION TOOL

Demographic Information Tool:

1. Age: \_\_\_\_\_
2. Race :  white- non-Hispanic     African-American     Hispanic  
 Asian     other (please describe) \_\_\_\_\_
3. How many times have you been pregnant? \_\_\_\_\_
4. How many children have you given birth to? \_\_\_\_\_
5. Current marital status:  never married  married  widowed  divorced  separated
6. Educational level (please check the highest educational level you have achieved):  
 K-8<sup>th</sup> grade     some high school (9<sup>th</sup>-12<sup>th</sup> grade)     high school graduate/GED  
 some college     college graduate     graduate school
7. Household income:  unemployed     0-\$14,999     \$15,000- \$24,999  
 \$25,000-\$49,999     \$50,000 and up
8. Height: \_\_\_\_\_                      Weight: \_\_\_\_\_
9. What medications do you take (please include herbal supplements and vitamins):  
\_\_\_\_\_  
\_\_\_\_\_
10. Are you menopausal (no periods for one year or more)?  yes     no
11. Did you have surgery to remove your ovaries?  yes     no  
If yes, how old were you when you had your ovaries surgically removed? \_\_\_\_\_
12. Are you a current cigarette smoker?     yes  no  
Have you been a smoker in the past?  yes  no
13. Do you think menopause is  a threat (negative) OR  a challenge (positive) OR  
 neither (neutral)?



APPENDIX E  
CARVER & SCHEIER COPE INVENTORY

COPE

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Then respond to each of the following items by blackening one number on your answer sheet for each, using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU--not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

- 1 = I usually don't do this at all
- 2 = I usually do this a little bit
- 3 = I usually do this a medium amount
- 4 = I usually do this a lot

1. I try to grow as a person as a result of the experience.
2. I turn to work or other substitute activities to take my mind off things.
3. I get upset and let my emotions out.
4. I try to get advice from someone about what to do.
5. I concentrate my efforts on doing something about it.
6. I say to myself "this isn't real."
7. I put my trust in God.
8. I laugh about the situation.
9. I admit to myself that I can't deal with it, and quit trying.
10. I restrain myself from doing anything too quickly.
  
11. I discuss my feelings with someone.
12. I use alcohol or drugs to make myself feel better.
13. I get used to the idea that it happened.
14. I talk to someone to find out more about the situation.
15. I keep myself from getting distracted by other thoughts or activities.
16. I daydream about things other than this.
17. I get upset, and am really aware of it.
18. I seek God's help.
19. I make a plan of action.
20. I make jokes about it.

21. I accept that this has happened and that it can't be changed.
22. I hold off doing anything about it until the situation permits.
23. I try to get emotional support from friends or relatives.
24. I just give up trying to reach my goal.
25. I take additional action to try to get rid of the problem.
26. I try to lose myself for a while by drinking alcohol or taking drugs.
27. I refuse to believe that it has happened.
28. I let my feelings out.
29. I try to see it in a different light, to make it seem more positive.
30. I talk to someone who could do something concrete about the problem.
  
31. I sleep more than usual.
32. I try to come up with a strategy about what to do.
33. I focus on dealing with this problem, and if necessary let other things slide a little.
34. I get sympathy and understanding from someone.
35. I drink alcohol or take drugs, in order to think about it less.
36. I kid around about it.
37. I give up the attempt to get what I want.
38. I look for something good in what is happening.
39. I think about how I might best handle the problem.
40. I pretend that it hasn't really happened.
  
41. I make sure not to make matters worse by acting too soon.
42. I try hard to prevent other things from interfering with my efforts at dealing with this.
43. I go to movies or watch TV, to think about it less.
44. I accept the reality of the fact that it happened.
45. I ask people who have had similar experiences what they did.
46. I feel a lot of emotional distress and I find myself expressing those feelings a lot.
47. I take direct action to get around the problem.
48. I try to find comfort in my religion.
49. I force myself to wait for the right time to do something.
50. I make fun of the situation.
  
51. I reduce the amount of effort I'm putting into solving the problem.
52. I talk to someone about how I feel.
53. I use alcohol or drugs to help me get through it.
54. I learn to live with it.
55. I put aside other activities in order to concentrate on this.
56. I think hard about what steps to take.
57. I act as though it hasn't even happened.
58. I do what has to be done, one step at a time.
59. I learn something from the experience.
60. I pray more than usual.

Scales (sum items listed, with no reversals of coding):

Positive reinterpretation and growth (**E**): 1, 29, 38, 59

Mental disengagement (**E**): 2, 16, 31, 43

Focus on and venting of emotions (**E**) : 3, 17, 28, 46

Use of instrumental social support (**P**): 4, 14, 30, 45

Active coping (**P**): 5, 25, 47, 58

Denial (**E**) : 6, 27, 40, 57

Religious coping (**E**): 7, 18, 48, 60

Humor (**E**) : 8, 20, 36, 50

Behavioral disengagement (**E**): 9, 24, 37, 51

Restraint (**P**): 10, 22, 41, 49

Use of emotional social support (**E**): 11, 23, 34, 52

Substance use (**E**): 12, 26, 35, 53

Acceptance : (**E**) 13, 21, 44, 54

Suppression of competing activities (**P**): 15, 33, 42, 55

Planning (**P**): 19, 32, 39, 56

**P**= problem focused coping method

**E**=emotion focused coping method

APPENDIX F  
UTIAN QUALITY OF LIFE SCALE (UQOL)

# Utian Quality of Life Scale (UQOL)

Please rate the degree to which you agree with the following statements, as they apply to you *within the past month*. Be sure to *answer every question!* Please circle your answer using the following 5-point scale:

1	2	3	4	5	
Not true of me				Very true of me	
Moderately true of me					
1. I am able to control things in my life that are important to me.	1	2	3	4	5
2. I feel challenged by my work.	1	2	3	4	5
3. I believe my work benefits society.	1	2	3	4	5
4. I am not content with my sexual life.	1	2	3	4	5
5. I am content with my romantic life.	1	2	3	4	5
6. I have gotten a lot of personal recognition in my community or at my job.	1	2	3	4	5
7. I am unhappy with my appearance.	1	2	3	4	5
8. My diet is not nutritionally sound.	1	2	3	4	5
9. I feel in control of my eating behavior.	1	2	3	4	5
10. Routinely, I engage in active exercise three or more times each week.	1	2	3	4	5
11. My mood is generally depressed.	1	2	3	4	5
12. I frequently experience anxiety.	1	2	3	4	5
13. Most things that happen to me are out of my control.	1	2	3	4	5
14. I am content with the frequency of my sexual interactions with a partner.	1	2	3	4	5
15. I currently experience physical discomfort or pain during sexual activity.	1	2	3	4	5
16. I believe I have no control over my physical health.	1	2	3	4	5
17. I am proud of my occupational accomplishments.	1	2	3	4	5
18. I consider my life stimulating.	1	2	3	4	5
19. I continue to set new personal goals for myself.	1	2	3	4	5
20. I expect that good things will happen in my life.	1	2	3	4	5
21. I feel physically well.	1	2	3	4	5
22. I feel physically fit.	1	2	3	4	5
23. I continue to set new professional goals for myself.	1	2	3	4	5

# Utian Quality of Life Scale (UQOL) Scoring Summary

**Instructions:** Each of the four subscales of the UQOL is represented by a unique color, as shown below. Sum the circled responses by color and enter the sum in the scoring summary section at the bottom of the page.

1. I am able to control things in my life that are important to me.	1	2	3	4	5
2. I feel challenged by my work.	1	2	3	4	5
3. I believe my work benefits society.	1	2	3	4	5
4. I am not content with my sexual life.	5	4	3	2	1
5. I am content with my romantic life.	1	2	3	4	5
6. I have gotten a lot of personal recognition in my community or at my job.	1	2	3	4	5
7. I am unhappy with my appearance.	5	4	3	2	1
8. My diet is not nutritionally sound.	5	4	3	2	1
9. I feel in control of my eating behavior.	1	2	3	4	5
10. Routinely, I engage in active exercise three or more times each week.	1	2	3	4	5
11. My mood is generally depressed.	5	4	3	2	1
12. I frequently experience anxiety.	5	4	3	2	1
13. Most things that happen to me are out of my control.	5	4	3	2	1
14. I am content with the frequency of my sexual interactions with a partner.	1	2	3	4	5
15. I currently experience physical discomfort or pain during sexual activity.	5	4	3	2	1
16. I believe I have no control over my physical health.	5	4	3	2	1
17. I am proud of my occupational accomplishments.	1	2	3	4	5
18. I consider my life stimulating.	1	2	3	4	5
19. I continue to set new personal goals for myself.	1	2	3	4	5
20. I expect that good things will happen in my life.	1	2	3	4	5
21. I feel physically well.	1	2	3	4	5
22. I feel physically fit.	1	2	3	4	5
23. I continue to set new professional goals for myself.	1	2	3	4	5

## Scoring Summary

	Lower QoL		Mean	Higher QoL	
	-2SD	-1SD		+1SD	+2SD
Occupational QoL	13	19	25	31	35
Health QoL	11	16	21	26	31
Emotional QoL	12	16	20	24	28
Sexual QoL	0	4	8	12	15
<b>Total QoL</b>	<b>48</b>	<b>61</b>	<b>74</b>	<b>87</b>	<b>100</b>

**Instructions:** Means for each factor, along with standard deviations above and below the mean, are shown above. After summing each factor, mark with an "X" roughly where the patient's score falls along each continuum. These marks will provide a graphic summary of the patient's QoL score on each factor and for the scale as a whole.

APPENDIX G  
BODY MASS INDEX (BMI) CATEGORIES

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<b>BMI</b>	<b>Weight Status</b>
Below 18.5	Underweight
18.5 – 24.9	Normal weight
25.0 – 29.9	Overweight
30.0 – 39.9	Obese
40.0 and above	Extreme obesity

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(Adapted from Body Mass Index Table, 2009)

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## BIOGRAPHICAL SKETCH

Catherine Alznauer Greenblum was born in Poughkeepsie, New York. She earned a B.S. in nursing with honors from Villanova University in 1983, received the Villanova University Leadership in Nursing Practice Award, and was inducted into Sigma Theta Tau National Nursing Honor Society. Her initial nursing experience was in intensive care and then the operating room at Pt. Pleasant Hospital, Pt. Pleasant, New Jersey. She achieved CNOR certification in 1987. She continued her professional development working in her husband's Ob-Gyn practice as a registered nurse and practice administrator for nineteen years. Catherine graduated from the University of North Florida with a master's degree in nursing in 2006 receiving the Barbara Fletcher Contribution to Nursing Science Award. She passed the ANCC Family Nurse Practitioner board certification exam in 2006 and has worked as a nurse practitioner in women's health for the last four years.

Catherine has been married to Jesse Greenblum for 23 years and they have two daughters: Lauren Meredith, a graduate student in speech pathology at Florida State University; and Sara Elizabeth, a sophomore majoring in international relations at Florida State University.